Relevance of Secondary Education in Ethiopia: Space Accorded 'Preparation for Work' in the Curriculum and Instruction

By

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This is to certify that the thesis prepared by Lemessa Abdi, entitled **Relevance of Secondary Education in Ethiopia: Space Accorded 'Preparation for Work' in the Curriculum and Instruction** and submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Curriculum Studies complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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Acronyms and Abbreviations

ESDP – Education Sector Development Program

GEQIP – General Education Quality Improvement Program

HR – Human Resource

MOE – Ministry of Education

TGE – Transitional Government of Ethiopia

TVET – Technical, Vocational Education & Training

ESLCE- Ethiopian School Leaving Certificate Examination

ICT- Information and Communication Technology

Abstract

The purpose of secondary education is not only to prepare students for the next level of education but also for the world of work. This can be realized when the curriculum and pedagogical practices of the schools are relevant to the skills demand of the world of work. The major purpose of this study is to investigate relevance of secondary education from this perspective. It specifically examined the space accorded 'preparation for work' in secondary school curriculum and instruction. Concurrent mixed research design with descriptive case study and content analysis research methods were employed. Data were collected from secondary schools teachers, school principals and students; secondary school graduate employees; documents (specifically textbooks and policy documents); and public sectors and non-public organizations that employ secondary school graduates. Questionnaire, interview, observation and document analysis were used to collect the data.

Results of the study revealed that the structure of the secondary education curriculum does not allow preparation of students for different destinations based on their interests and capabilities. The tracks that take students to different destinations are not clearly sketched. Permeability across the different lines, and the basic profile expected from secondary school graduates to join the different destinations including the world of work are not defined in the policy and related documents. In the same manner, the work skills that are essential to be attained at secondary school level and the potential employers of secondary school graduates are not clearly defined and indicated in the policy documents. The results show that involvement of employers in curriculum making processes and representation of their say was not evident. Stakeholders who are expected to take part in the curriculum making processes and textbook preparation had no clear understanding about the purpose of secondary education and students' future destinations. Moreover, it was identified that the coherence between the policy, curriculum and pedagogical practices of the schools regarding the value and the level of integration of the skills to prepare secondary school students for work was not strong. It was confirmed that the skills demand of public sectors and non-public organizations was almost similar. However, majority of the novice employees graduated from secondary schools faced difficulty to demonstrate the required skills. The results from curriculum content analysis uncovered that the skills employers require from employees are not adequately integrated in secondary school textbooks. Majority of the objectives, activities and exercises that are included in secondary school textbooks have no considerable association with the skills required to prepare students for work. Moreover, they are not equally represented in the three units of analysis: objectives, activities, and exercises and end-of-units questions; the skills are better reflected in (review) activities. Teachers' pedagogical practices and the assessment tools employed in the school were not relevant to equip students with the skills demand of employers. Thus, it is concluded that the space accorded 'preparation for work' in secondary school curriculum and instruction was very weak.

Based on the findings, it is suggested among other things, that the Ministry of Education (MoE) takes the necessary caution in preparation, implementation and revision of secondary school curriculum. It is very essential to devise opportunities for schools to enable them prepare students for the different destinations and to equip students with the skills employers require from secondary schools graduates. Curriculum experts and teachers, who have adequate understanding about curriculum development and pedagogy and the different destinations of students, are vital to prepare and deliver curriculum which is relevant to the needs of the world of work. Hence, the MoE and its structure need to take good care of that in the secondary education reform efforts.

Keywords: Curriculum, instruction, relevance, secondary education, work skills, world of work

Chapter I

Introduction

1.1 Background of the Study

In contemporary educational systems, secondary education comprises the formal education which is connected to the different destinations and takes young people where they want to go in life. Mostly, it is characterized by transition from the typically compulsory, comprehensive primary education, to the optional, selective tertiary, post-secondary, or higher education (e.g., university, vocational school) (Burrnet & Jayaram, 2012). According to Jacob and Lehner (2011), secondary education is described not only as a link between primary schooling and tertiary education, but also as bridge to the world of work. It plays a fundamental role in the preparation of young people for the labour market, especially for people who leave secondary school education for a job. In developed countries, the education that children receive during their teenage years has long been recognized as crucial to development of job skills and other attributes that affect the ability to function productively as a member of society (Eubanks & Eubanks, 2009). Gradually attempts were made to change and improve the role of secondary education in Africa in line with the progress of development of the countries. Previously, in most African countries, the role of secondary education is mainly to enable students acquire the knowledge and skills that are important to prepare them for the future education (Opertti & Brady, 2009; Verspoor, 2008). Recently, it is perceived as the level at which students develop knowledge, attitude and skills for work and higher education, and it serves as a bridge for school to the world of work.

In today's education systems, Sahlberg (2007) noted that secondary education has a dual role. On one hand, it serves as an extended platform for all young people to further develop the knowledge and skills that are needed in society and the knowledge-based economy. On the other hand, it provides them with qualifications for the labour market and further learning. As indicated in Grimmer (2022), secondary education prepares students not only for higher education and lifelong learning but also opens opportunity to join the labour market. It plays a vital role in preparing students for future life and work and provides them with the competences that are essential to deal with the tasks they need to perform in their lives (Armstrong et al., 2020; Opertti & Brady, 2009). Jacob and Lehner (2011) believe that secondary education promotes the development of skilled and knowledgeable citizens with access not only to the national but also to the global economy. For Bainton, Barrett and Tikly

(2016), investment in secondary education yields considerable social and private returns, offering young people the chance to acquire attitudes and skills which in turn enable them develop job-oriented skills, participate fully in society and continue learning. Similarly, as indicated in MoE (2009), secondary education in Ethiopia is understood as the main road between primary school and tertiary education designed to prepare students for higher education and professional trainings and the world of work. In addition, it is considered among the tools that have significant contribution to reduce poverty and to enhance economic growth of a country (Grant, 2017). This can be realized when education system provides schools with the curriculum that are relevant to the requirements of the world of work and delivered to students via high quality instruction.

Today's labour market needs people with the competencies that cannot be developed only at primary school level or in secondary school where the curriculum is irrelevant to the demands of the world of work (Taylor & Robinson, 2019). Esther et al. (2018) also argued that the world of work demands education systems that equip graduating students with the ability to use and apply knowledge and concepts beyond the core knowledge and concepts basic education provides or technical and vocational education within a formal education system provides. Brewer (2013) believes that relevant secondary education caters the widest possible range of competencies, skills and abilities that are vital to set young people on the path to the world of work and help them satisfy the requirements of the employers and the labor market. Hilton (2015) suggested that secondary education should be skill-focused program which provides students a broad and balanced knowledge of key subjects, cognitive skills, interpersonal skills and intrapersonal skills that are relevant to the demand of the world of work. However, Lewin (2008) argued that in most African countries, secondary education has been largely academic in orientation, equipping learners with the knowledge, skills and understandings necessary to go onto further academic study at the university level.

Researchers didn't hesitate to suggest possible solutions that could improve relevance of secondary education to the demands of the world of work. In several countries, lower and upper secondary schools are divided into multi tracks and specialized schools/programs to satisfy the diverse interests of students' career path and to equip students with different areas of knowledge and skills that satisfy the demand of the world of work (Fidler, 2017). Lauglo et al. (2012) suggested that, in order to improve relevance of secondary education and to prepare learners for effective entry to employment and jobs, secondary school curriculum should be vocationalized. Vocationalization of secondary

education is not synonymous with vocational education. Though both involve skills development, the aim of vocationalization of secondary education is to develop in the students the skills, attitudes and confidence to carry out tasks and to build the capability to act in a variety of work and real life situations whereas vocational education gives skills for a specific vocation (Akram, 2012). Vocationalization needs diversification of general academic curriculum to include technical areas and generic skills that aims at improving learners' capacity for employment in the formal and informal sectors. Lauglo et al. (2012) also believe that the goal of vocationalization is to improve relevance of secondary school curriculum to the world of work and to prepare students for a wider range life and work activities.

However, Susan and East (2017) argued that today's labor market requires the workforce not only equipped with technical skills (job-specific skills) and attributes but also laborers who possess adequate competencies and skills that are relevant to the workplace. In line with this, Amadio (2013) suggested that secondary school curriculum and instruction should impart a broad repertoire of skills. These skills should include a cluster of essential generic competencies and higher order thinking skills. The work skills employers (industries or organizations) in different countries demanding are named with different terminologies, including transferable skills, key competencies, soft skills, generic skills, employability skills, non-technical skills, and 21st-century competencies/skills (Amadio, 2013; Salonen et al., 2017). Silva (2008) also noted that the term "workforce skills" is often used interchangeably with a number of other related terms such as "applied skills", "cross-curricular skills", "interdisciplinary skills", "soft skills", "life skills", "interpersonal skills", "21st century skills" and "non cognitive skills". These skills are not job specific but are skills which cut horizontally across all industries and vertically across all jobs at all levels (Suarta et al., 2017). Those writers describe the work skills as a set of non-technical knowledge and skills that are connected with personal attributes and attitudes (confidence, discipline, self-management...), social skills (communication, team working, and emotional intelligence.) and management abilities (time keeping, problem solving, critical thinking…).

Though the work skills are described with different synonymous terminologies and countries have developed their own different frameworks, the core competencies and work skills are categorized into five broad domains of competencies, skills, values and/or attributes: critical and innovative thinking (cognitive skills), interpersonal skills, intra-personal skills, global citizenship, and media and information literacy (UNESCO, 2016). Having reviewed a number of studies and policy documents of different countries Joynes, Rossignoli, &

Fenyiwa (2019) found out that critical thinking, creative thinking, creativity and innovation, communication, problem-solving and decision-making, teamwork and collaboration, and the ability to learn independently as well as manage oneself at work are the most important skills for the workforces and organizations (employers) around the globe. Each of these work skills students need for life and work in contemporary work environment and increasingly valued by employers are placed into one of the three domains of competencies: cognitive, affective (or interpersonal) and intrapersonal (self regulation) (Amadio, 2013). Each domain of competencies consists of a number of skill attributes. Similarly, as indicated in MoE (2009), higher order skills and base-line skills are the key competencies students need to live, learn, and work.

An education system is successful to the extent it equips students with the competence requirements of the labor market and students' future career. In order to prepare future workforce in a rapidly changing world, secondary schools are required to provide students with a broad range of skills. This can be possible when relevant competencies and a wide repertoire of skills employers expecting from the workforce are integrated in the academic secondary school curriculum as content, learning outcomes and learning experiences and addressed in pedagogical activities and assessment tools. If the concern is to prepare learners for the world of work, selection and organization of curriculum contents and learning experiences should consider the skills that are recognized to enhance youth's personal capability for social interactions, aptitude to work with other people and the ability to organize activities and make informed decision (Brewer, 2013). A more practical, student centered and interactive way of teaching general academic subjects is also among the strategies suggested to improve relevance of secondary school instruction to the world of work (Terzieva et al., 2015). Instructional methods that encourage students to solve practical problems, work in groups, participate in class activities, critically analyze and synthesize information and make informed decisions help them to build the skills increasingly needed in the world of work. In order to create suitable conditions for building the required skills, teachers must use variety of interactive pedagogical approaches and employ a wide range of instructional activities that are essential to encourage learners develop the key work skills.

Since its inception, the concern to improve the provision of secondary education in developing countries has often revolved around the question of relevance of curriculum (Ndala, 2006). Several documents show that attempts were made to improve relevance of education in Ethiopia. For instance, during British period (1942 to 1954), human resource

development was given attention; the aim of education was to produce a workforce that could serve in government office (Sisay, 2016). To meet these needs, the first secondary school was established in 1943 with some assistance from the British Council. Besides academic secondary school, the government established technical and vocational schools. Unfortunately, commercial, technical, and agricultural education were regarded as second-class education, reserved for those who could not make the grade in academic secondary schools, or who had to go to work immediately after finishing secondary education. Comprehensive secondary education which was introduced in 1962 (during American period) opened new opportunity for students to join either academic or vocational education stream (Alemayehu & Lasser, 2012). The initiative was to meet the potential manpower demand in technical and commercial fields. However, irrelevance of education to the problems and issues of the community, irrelevance of curriculum, lack of instructional supplies and equipment, lack of the necessary realism which students need for motivations, and lack of clearly defined educational objectives were among the factors hindered achievement of the expected skills (Binayew & Tadele, 2016). Moreover, preparing students for ESLC examination was the real practice of the schools. Consequently, secondary education was criticized for being elitist, academic-oriented, and irrelevant to the world of work (Alemayehu & Lasser, 2012). During the socialist Derg regime, general polytechnic education with the aim of producing trained manpower was proposed to ameliorate the problem of unemployment of graduates of secondary education. Though the syllabus of secondary school subjects reflected the objective, contents in textbooks do not reflect the identified goal of education (Solomon, 2020). It must be noted in conclusion that, the education systems and curriculum were almost entirely the duplicate of the foreign countries that are irrelevant to prepare students for the workforce demand of the country.

In Ethiopia, the question of relevance of education and the concern to alleviate the problem was not closed after 1991. With the intention to replace the copied educational systems and the irrelevant curriculum that didn't address the need and problems of the society, the Ethiopian government had declared the 1994 Education and Training Policy (TGE, 1994). The policy identified the problems of access, equity, quality, relevance and efficiency as strategic areas to be addressed. Restructuring the education system and changing the curriculum to increase relevance of education was among the key concern of the policy document. Furthermore, to effectively implement the policy, Ministry of Education and the government continued to develop different strategies and programs. Though, access of education is improved through

implementation of the policy, relevance of secondary education was not improved to the level of the policy expectation. Consequently, access to relevant secondary education was among the issues gained more attention of the government and researchers. The new Ethiopian Education Development Roadmap (Tirussew et al., 2017) also recognized that the problem of relevance was among the major problems of seconday education and the education system of the country. Besides, the new roadmap was intended to contribute its part in solving the problem of relevance of education the country has been facing since its inauguration.

The goal of secondary education in both developed and developing countries including Ethiopia is to prepare students for further education and for the labour market. The labour market, higher education and professional trainings including primary school teachers training and technical and vocational trainings are reliant on the output of secondary education. Manufacturing industry, agriculture, construction, business sectors, services and public sectors are among the labour markets inviting secondary school graduates around the globe (International Labour Organization, 2016; Seetha, 2014). These organizations demand not only job-specific skills but also the skills that are transferable across different geographical locations (countries), all industries, public sectors and jobs at all levels (Suarta et al., 2017). In Ethiopia, organizations that have been absorbing secondary school graduate as employee are industries, public sectors, private and non-public organizations (Education Development Centre, 2018). The three main sectors in the formal Ethiopian economy that offer the most opportunity for employment for youth are construction, manufacturing, and the services sector. The research conducted by Berhe and Tsegay (2018) revealed that services, industry and agricultural sectors contributed 68.5%, 23.6% and 7.9% of the total employment respectively, and the share of secondary school graduates' employment in industry was the highest. In 2006 and 2014, the share of secondary school graduates employment in industry was 29.1% and 25.5%, respectively (Berhe and Tsegay, 2018). In the same manner, the unemployment rate and its trend significantly vary across the different levels of education, and it was highest for secondary education graduates. Tewabe (2018) identified that 20% of the registered job seekers in 2018 were high school graduates. Secondary education is, therefore, considered as an important bridge not only to join the next level of education and training, but also to the world of work. The strength of the bridge and effectiveness of the transition is to the extent of relevance of secondary school curriculum and pedagogical practice of the schools. The aim of the study was, therefore, to assess space accorded 'preparation for work' in secondary school curriculum and instruction.

1.2 Statement of the Problem

Secondary education, as explained earlier, prepares students for a wide range of career options and the next level of education and trainings. It is tasked to equip students with the knowledge, skills and values that are vital to fit the requirements of the labor market, and the need of society at large. However, one among the main challenges Africa countries have been facing is the problem to equip students with the knowledge and skills that help them to become self-employed and effective in the workplace environment. As indicated in Meyer et al. (2017) and Joshi and Verspoor (2013), though relevance of education has got a major concern, secondary education in most developing countries including Ethiopia continued to follow rigid curricula based on traditional disciplines and comprise excessive academic subjects and curriculum contents and objectives that don't address the realities of the countries.

The challenge of secondary education in Africa is three-fold (Evans & Acosta, 2020). First, there is a real need for the expansion of secondary education. Second, there is a quality imperative to ensure that secondary school graduates are competitive on the labour market and can make a real contribution to Africa's economies. Third, the education provided must be relevant and meet the peculiar needs of a wider variety of learners and responding to the changing nature of knowledge and the world of work. Furthermore, the challenge of secondary education is related to the existing narrow conception of the goals of secondary education. Preparation for preparatory school was priority of general secondary school students and TVET was reserved for the second class students (who are unable to satisfy the requirements of preparatory school). That is, preparation for tertiary education has been accorded undue reference over the other equally important goals; preparation for the world of work. Hence, it is worthwhile to study how educators and students perceived the purpose of secondary education.

The problem of accessible, equity, quality, adequacy and relevance has been among the problems of secondary education since the commencement of modern education in Ethiopia (Frost & Rolleston, 2013). The 1994 Education and Training Policy had recognized that and aimed to improve quality and accessibility of education as well as to address the relevance of the curriculum to the realities of Ethiopia population (TGE, 1994). Though access to education is improved (to some extent) through the establishment of more schools, it is beyond doubt that the relevance problem persisted. Regarding this, results from several studies confirmed that the problems of relevance of curriculum are still visible in the

country's education system (Amare, et al., 2016; Solomon & Aschale, 2019). Evaluation of people who are close to secondary education and my personal observation also realized that the problem of relevance of education has been among the major challenges of the Ethiopian education sector.

Obviously, secondary school students do not have similar interest and capacity to go on the same track. Some may need to prepare themselves for further education (higher education or professional training) and others may expect employment (self, public and non-public [e.g., private, NGO] employment). These diversified interests of students demand secondary school curriculum to comprise a harmonious balance of academic disciplines, generic, practical, and social skills (Opertti & Brady, 2009). However, the study conducted by Joshi and Verspoor (2013) revealed that the Ethiopian secondary school curriculum was too difficult and academic oriented that don't address the needs of students who are not destined to higher education. Majority of those who didn't get the chance or not interested to continue further education have been employed or knocking the doors of employers that demand the core work skills. However, it was argued that students finish secondary school as unprepared individuals who fail to demonstrate competencies expected from them. Assessing relevance of the skills and competencies included in the textbooks to the various destinations of students is among the concern of the present study.

There is strongly held opinion that the demand of the world of work is satisfied when the education system allows school to have different streams and different types of schools (Blom et al., 2017). Accordingly, to improve relevance of Ethiopian secondary education to the world of work, technical and vocational trainings were suggested to be offered after completion of general secondary education (TGE, 1994). However, implementation of the program didn't bring significant change to relevance of the curriculum and quality of the workforce demanded employers of secondary school graduates (Joshi & Verspoor, 2013). As discussed in Blom et al. (2017), the question of skills development for entry into the labour market is not only an issue for technical or vocational education, but also general (academic) secondary education needs to inculcate the generic skills demanded by employers. The vocational subjects that were added on academic curriculum or offered as independent program to prepare students for work and to enhance employment immediately after graduation by ignoring the role of work/soft skills that are vital in the workplaces didn't bring significant change to relevance of secondary education (Alemayehu & Lasser, 2012; Fassil, 1990; Tekeste, 1990). Thus, disparity between the expectations of employers of secondary

school graduates and the knowledge, attitudes and skills included in secondary school curriculum and instruction need to be carefully studied and addressed.

There are different studies conducted to identify the skills demand of employers across the world, including in Africa (Esther et al., 2018). Fifty percent of employers surveyed globally identified workers with a skills gap to be deficient in soft skills (Hurrell, 2016). Few countries tried to identify how often 21st century skills mentioned in policy documents and different levels of education program (Pešikan & Lalović, 2017). Among the studies deals with relevance of education in Africa, the research conducted by Jidamva (2012) and Frost and Rolleston (2013) asserted that secondary education in some Africa countries was not in a position to prepare pupils for the future career. The research conducted to understand the link between secondary education and the real life of society revealed that in most developing countries there was a considerable gap between what is learned and the real-life context of students' present and future world (Mensah et al., 2007). They also disclosed that in some less developed countries, general secondary education wasn't understood as the best preparation area to enter into labour market.

Several studies conducted on Ethiopian education over the years (Maaza, 1996; Tekeste 1990, 2006; Teshome 1976) revealed that relevance is among the bottle-neck problems of the education system. Similarly, researches confirmed that, many years after its inauguration in Ethiopia, secondary education is still facing the problem of relevance (Alemayehu & Lasser, 2012; Joshi & Vespoor, 2013). This implies, attempts made to address the problem has not been very successful (Amare, et al., 2016) and secondary and, recently, tertiary education graduate unemployed continued to increase from time to time (Tewabe, 2018). That may mean, the efforts made to improve relevance of education didn't brining significant change. By focusing only on secondary school graduates (completers), who are focus of the present study, one can ask why are they unemployed? How effective are those employed? What knowledge, skills, and competencies are employers demanding of graduates of secondary school today?

Secondary school graduates not going to tertiary education are not an insignificant number. Data from national examination agency confirmed that significant number of grade 12 graduates 'do not qualify' to proceed to tertiary education. For instance, among the students who took university entrance examination in 2021/22 (2014EC) and 2018/19 (2011EC), only 3.3% and 44.73% (respectively) achieved the point that allowed them to join public universities. In 2017/18 (2010 E.C) academic year, 24.25% (excluding those

allowed to go to nonpublic institutions) of students who took grade 12 national examination were unsuccessful to join universities. The principal opportunity opens for those who were not successful to go to university was the labour markets that demand diversified skills. A couple of studies were conducted to assess relevance of education in Ethiopia (Joshi & Verspoor, 2013; Solomon & Aschale, 2019). Unfortunately, such local studies didn't consider the skills demand of employers. Also, the gap between the acquired skills and the skills required in the world of work is not clearly identified. Hence, it is very essential to ask how well those youth (who were not proceeding to teritiary education) were prepared for the world of work. Besides, the local studies didn't' try to learn views of curriculum makers and users on how the intended and taught curriculum were responding to the skills demands of the employers.

Moreover, this study is intended to add its contribution to the efforts made to improve relevance of secondary education in general and secondary school curriculum and instruction in particular to the demands of the world of work. Besides, the researcher believes that to bring real change to relevance of secondary school curriculum and instruction to the world of work, we need to conduct more comprehensive research that allows researchers to give equal emphasis to all relevant data sources, including textbooks, classroom (instruction), employees, educators and employers that are on the front line to absorb the output and victims of the problems of secondary education and secondary school. The intent of the current study was, therefore, to investigate relevance of secondary school curriculum and instruction to the world of work through in-depth analysis of objectives, activities and exercises and end-of-unit-questions included into the textbooks and critical exploration of instructional activities employed in the schools.

1.3 Objectives of the Study

The main objective of the study was to examine relevance of secondary education to prepare students for the world of work. The specific objectives are the following.

1. To examine key stakeholders understanding of secondary education vis-à-vis the official proclaimed purpose.
2. To identify the skills secondary school graduates should be equipped with to satisfy the requirements of employers and the world of work vis-à-vis skills they claim to have acquired.

3. To appraise the extent to which the skills the world of work requiring from graduates of secondary schools are integrated in the curriculum.
4. To evaluate pedagogical practices of the schools against the skill demands of the world of work.
5. To assess how the purpose of secondary education is coherently reflected in the education policy document, secondary school curriculum and pedagogical practices of the schools - in terms of the skill demand of the world of work.

1.4. Research Questions

The following are the basic research questions identified to guide the study.

1. How do educators and students understand the purpose and relevance of secondary education?
2. What are the knowledge, attitude and skills employers look from secondary school graduates?
3. How relevant is secondary school curriculum vis-à-vis the competencies required in the world of work?
    - 3.1. How well competencies required in the world of work adequately incorporated in secondary school curriculum?
    - 3.2. How appropriate is the curriculum structure of secondary education to produce knowledgeable and skilled workforce?
4. How appropriate is the pedagogical practices of the schools to provide students with relevant competencies?
    - 4.1. How well do the schools employ pedagogical strategies that are effective to prepare students for the world of work?
    - 4.2. To what extent do the schools equally assessing theoretical knowledge and practical skills of students using different assessment techniques?
5. How aligned are the education policy, secondary school curriculum, and teaching-learning process - to prepare students for the world of work?

1.5 Significance of the Study

The study was to evaluate relevance of secondary education to demands of the worldof work. Mainly, it was to examine the space provided to the work skills employers require from the workforce in secondary school curriculum and instruction. The study informs the key stakeholders to become conscious about the role of secondary education in preparing students

for the world of work. It gives better understanding for curriculum experts, textbook writers, teachers and employers about the real status of relevance of secondary education to the world of work by showing the inside realities of the textbooks and the actual classroom practices. Besides, it provides policy makers, curriculum planners, subject curriculum expertise, textbook writers and teachers (relatively) a clear picture of the different parts of secondary school textbooks and their relevance to the skills requirements of the world of work. The study may help them to get understanding of the problems that are related to selection and actual usage of the educational philosophies, curriculum development models and instructional approaches to prepare secondary school curriculum. Encouraging teachers to revisit and evaluate the role of the instructional strategies they used to apply in their classrooms. The study may serve as an input for further related studies and for the educational reforms to be made in the country.

1.6 Delimitation of the Study

The major target of the study was to appraise the relevance of secondary education curriculum to one of its purposes: preparation for the world of work. Hence, the study was delimited to identifying the skills demands of employers (public sectors and non-public organizations) that have been employing secondary school graduates and to what extent these skills are integrated in the curriculum and instructional activities of the secondary schools. Though, organizations that have been employing secondary school graduates are available across the country, areas where large number of industries that have employed large number of secondary school graduates and areas where limited number of industries exist were included in this study. Since the context of public secondary schools in Ethiopia and the nature of the organizations hiring secondary school graduates is the same across the country, limiting its scope to these areas do not bring significant difference to the results of the study.

Among the subjects offered at secondary school level, Chemistry, Biology, History and Geography were selected to give equal room for the two streams (natural science and social science studies). In addition to the skills that can be acquired through classroom instruction, these subjects provide students the opportunities to visit different areas including industries and historical areas where students get first hand experiences and develop the skills that are relevant to demands of the employers. Learning objectives, activities and exercises and end-of-unit-questions that are included as curriculum content in the selected textbooks were reviewed to understand their relevance to the skills demand of the labour market. Pedagogical

practices of public secondary school teachers were assessed by referring to the knowledge, skills and attitudes secondary school graduates required to satisfy the requirements of the world of work.

The Education Policy (1994), curriculum framework for KG - grade 12 (MoE, 2009), and ESDP-III, IV, V and VI were used to learn how secondary education and the required skills are presented in the documents. Among the issues discussed in the documents, curriculum, instruction, assessment and the skills required in the world of work were the focus of the study. Examining the alignment among the education policy, secondary school curriculum, and pedagogical practices of the school was among the concern of the study.

1.7 Limitations of the Study

In due the course of the data collection, two managers of the nonpublic organizations (employers) that were initially identified refused to allow the researcher to make contact with the target groups. One among HR (respondent) of the public organization was not open enough to disclose the criteria used to hire workers at the organization. This situation pushed the researcher to take more time and look for additional organizations to get the required data. Some of the interviewees refused to be tape recorded. Consequently, only notes were taken as they were responding the interview questions. Moreover, 7 questionnaires were not returned to data collector or not appropriately filled by teachers (2) and students (5). As a result, questionnaires that are not returned and not appropriately filled were totally rejected. The researcher revisited two schools and collected seven more questionnaires to replace the rejected ones. Triangulating data collected via questionnaire with the information obtained through interviews and observations was used to somehow minimize impacts of these limitations.

1.8 Definition of Key Terms

Relevance: Relevance is not an absolute term; nothing is either relevant or irrelevant in and of itself (Scheffler 1978 cited in Ranaweera, 2000). Relevant to 'what, how, and why?' is the question most often used to determine relevance of the issue under consideration. For, Lomas (2002) relevance of education should be defined in terms of the competencies, knowledge, and skills requirement of society. Marriott and Goyder (2009) believe that education should be relevant to the knowledge and skills students require for present and future career. According to Ranaweera (2000), in the context of education, relevance refers to the extent to which education meets the needs, interests and intellectual abilities of the learners, and the

degree of its relationship with the values and objectives of a given society. Relevance of education to a given situation considers personal relevance to learner (ability, needs, interests, and aspirations), specific setting, learning skills and skills needed in future at different stages of life, temporal relevance (occupational skills), national relevance (political, economic, social, cultural, moral), and global or universal relevance (Albrecht & Karabenick, 2018).

For the purpose of this research, the term relevance refers to appropriateness of the intended and taught curriculum and pedagogical practices of the schools to provide students the opportunities to acquire the competencies, skills and attitudes that suit the demand of the world of work. Besides, relevance refers to the extent to which curriculum structure, curriculum experiences (objectives and learning experience) and instructional activities are pertinent to the aspirations of students that are connected to the demand of the world of work.

Secondary education: Secondary education is the bridge between primary school and tertiary education. The central objective of secondary education is to provide young people with opportunities to acquire the skills, aptitudes, values, and knowledge needed to continue education and to be productive workforce. As discussed in Baarrett (2017), secondary education serves as a platform for young people to further develop the knowledge and skills that are needed in society, the world of work and higher education. The purpose of secondary education is, therefore, to provide students with the knowledge and skills for effective preparation for tertiary education as well as for the world of work either as wage employees or as self-employed entrepreneurs.

In this study, secondary education is defined as a four-year education program, covers from grade 9 to grade 12, which is designed to prepare students for work and tertiary education.

Work Skills: refers to the skills that are typically considered as not specifically related to a particular job, task, or academic discipline or area of knowledge; they can be used in a wide variety of situations and work settings. They can be used in a wide variety of situations and work settings regardless of the type of organization and positions (either lower, or middle or upper level) in the organization (Borghans, Weel, & Weinberg, 2014). Amadio (2013) mentioned that transversal skills, generic skills, soft skills, life or basic skills, 21st century skills, key skills/competences, and employability skills are synonymous terminologies used to describe the work skills. Brewer (2013) believes that the abilities to read, write, listen and communicate effectively; to think critically and creatively; to solve problems independently; to make informed decision; to manage oneself at work; to interact with co-workers; to work in teams or groups; and to lead effectively are the core work skills employers (different

organizations) expect from the workforces. The skills that are highly preferred by most of the organizations around the globe are categorized under cognitive, interpersonal/affective, and intrapersonal domains (Esther et al., 2018).

In this paper, the work skill is defined as the skills expected to be demonstrated by employees graduated from secondary schools including critical thinking skills, creativity and innovative thinking skills, problem-solving skills, decision-making skills, ability to work independently, communication skills, teamwork and collaboration, time management skills and intrapersonal skills (self-management, ability to learn, and self evaluation). These work skills are categorized under cognitive, interpersonal/affective, and intrapersonal domains of competencies.

World of work: The world of work is the place where the supply and the demand for jobs meet with the workers or labor force providing the services that employers demand. The worker/employee is anyone who wishes to offer services while the employer may be a single entity or an organization that is in need of an individual to do a specific job or to complete a task. Manufacturing industry, agriculture, construction, business sectors, services and public sectors are among the labour markets inviting secondary school graduates around the globe (Seetha, 2014; International Labour Organization, 2016). In Ethiopia, as identified by Tewabe (2018), organizations that have been inviting secondary school graduate or leavers as employee are public sectors, manufacturing industries, construction, agriculture, service sectors, and private business. In this paper, the world of work refers to the workplaces including public organizations, private sectors, and nonpublic organizations that have hired secondary school graduates as employee or inviting secondary school graduates.

Chapter II

Review of Related Literature

Introduction

This section presents reviews of the accessible theoretical and empirical evidences that are relevant to the issue under investigation. This part is mainly devoted to reviewing theoretical perspectives focusing on relevance of secondary education in general and secondary school curriculum and instructional activities in particular. The review on the theoretical aspects was made to focus on the role and relevance of secondary education and the strategies used to alleviate the problems that are associated with the key subjects of the study. Secondary education in Ethiopia and some selected countries, the purpose of secondary education, historical development of education with reference to relevance, curriculum development practice in Ethiopia, and curriculum for the world of work are among the major focus of the review. The two most pertinent theories that are selected to construct theoretical framework of the study are discussed next to the part which discuss about work skills. Conceptual framework of the study, which is presented to indicate the major variables investigated, is discussed at the end of this section.

2.1 The Concept of Relevance of Education

Education provides students with the tools to deal with and find solutions to the challenges confronting human being. In most Africa countries, one among the goals of education is to prepare students for future life. Unless relevant education is provided, none of the countries will realize the goal. For most people including political authorities, parents, and educational administrators, relevance of secondary education is defined in terms of students' national examination results. In the field of education, relevance can be considered from the point of view of the learner. For instance, for Lauwerier (2015), relevance refers to the extent to which education meets the needs, interests and intellectual abilities of the learners and the degree of its relationship with a given objective. For this writer, education is relevant if it fosters the learning of skills necessary to fully participate in different spheres of human life, and face demands and challenges of society. That is, relevant education fits the present and future needs of all learners. The idea of being relevant to all learners suggests that education recognizes the diversity of learners' expectations, and hence, the curricula contents should address the diversified interests of students. Barrett and Tikly (2012) asserted that education is relevant if the learning outcomes are meaningful not only for all learners, but also valued

by their communities and consistent with national development priorities. Ngoni and Oswell (2017) noted that, for any education system to be universally regarded as relevant, it should be purposeful, useful, applicable, has an aim and complete, and anchored on a relevant philosophy. Lauwerier (2015) identified three basic questions that are used as criteria to determine relevance of education: "Is it meaningful for alllearners? Is it valued by the communities? Is it consistent with national development priorities in a changing global context?" (p. 30). These questions highlight importance of relevance of education to learners' age, ability, needs and interests, aspirations; parents' occupation, practices and values; specific setting of the society; relevance to temporal factors including motivation, occupational and learning skills; relevance to the political, economic, social and cultural context of the country and relevance to universal issues.

Relevance is considered as an important dimension of quality of education which demands relevant curriculum and instruction, learning-materials, trained teachers who use child-centered teaching approaches, and safe and nurturing school learning environment (UNESCO, 2015; Schleicher, 2011). Relevant curriculum maintains balance between the needs of society and the needs of the individuals, national and global needs. The other dimension of relevance of education is related to organization of curriculum contents in achieving a balance between the various components (disciplines or contents) that stake a claim for inclusion in the curriculum in order that all the desirable learning objectives are adequately covered (Marriott & Goyder, 2009). This implies that relevant education provides adequate and equal space for the different modes of knowing (cognitive, affective, psycho-motor) and recognizes the mental, physical, emotional and spiritual development. Tedesco, Opertti, and Amadio (2013) argued that, the solution to the problem of balance should be sought not only in relation to disciplines or in terms of a balance to be established between objectives expressed as knowledge to be acquired, attitudes, values or skills; instead, it should be seen in terms of the converging influence of the various components of the educational process on the development of the personality through cognitive, affective, ethical, aesthetic and sometimes even physical aspects.

The role of education is not only to fill up students' mind with theoretical knowledge. The other area of assessment of balance should be between the different domains of learning objectives (cognitive, affective, and psycho-motor). That is, checking the balance between the learning objects in light of the balance between the needs or interests of pupils and the principle of personality development, and between theoretical elements and the immediately

applicable or practical contents, or between conceptual aspects and exercises (Opertti, 2017). If education is considered as one of the main factors contributing to the development of an individual and a nation and to the improvement of the quality of life, all aspects of education and curriculum should be relevant to the historical, social and cultural traditions of the country, national development goals, socio-economic conditions, environment, natural endowments and the aims and aspirations pertaining to the quality of life of the community (Kapur, 2019). As indicated in the same document, no education is accepted as being relevant unless it helps in unfolding the full potential of the student and plays the role of linking the development of the child with the society, local and global context and socio-cultural dimensions.

Relevant education necessarily comprises an adequate and maintains a harmonious balance of academic disciplines, fundamental skills, transversal skills, social skills and practical skills. Susan and East (2017) believe that, in order to prepare young people for life and work in a rapidly changing world, education systems must impart a broad stock of the key work skills. These skills include the key generic competencies and non occupation-specific practical capabilities that help students to acquire the ability to learn independently, to work with others, critical thinking and entrepreneurship. Tedesco, Opertti, and Amadio (2013) define competency as a combination of knowledge, skills and attitudes that are relevant to the context, and key competencies are those which all individuals need for employment, personal development and social inclusion.

Although, the concept of relevance is still contentious, it is clear from several literatures that relevant secondary education facilitates the acquisition of knowledge and development of skills and attitudes that have intrinsic value to address important learners' goals and the demands of world of work. As one of the strategies to realize educational goals, the education system should provide students with relevant curriculum that enables every learner to acquire the core academic contents and basic cognitive skills, together with essential work skills that equip them to become effective in the world of work, make informed decisions, and develop life skills and good social relationships (Colby, 2000). A curriculum which gives students opportunities to discover knowledge by themselves rather than imposing readymade knowledge on them are more important to help students develop the essential work skills. Although, learning the foundational skills and knowledge is vital to all students, to become productive citizens not all students need to learn the same content. For this reason, Majid et al. (2012) suggested that schools are required to provide students with a basic set of relevant

knowledge, skills, attitudes, beliefs and values that prepare them for the next level of education, work and life.

The debate on justice in education has long been focused on the idea of equality. Those who criticize education systems for being unjust often point to inequalities within the systems (Johannes, 2018). Equity of education often uses the notion of equality of opportunity. In education context, however, an equitable distribution is not valuable in itself; instead, it is of primary importance for each student to have adequate and relevant education (ibid). This implies that relevant education considers an education that ensures all students can gain the right kind of knowledge, skills, and attitudes for a given purpose. Ngoni and Oswell (2017) also argued that relevant education should be grounded on a specific and appropriate philosophy. That is, for any education to be deemed relevant and meaningful, it must evolve from the particular people's philosophy of life, and must address the needs and problems of the particular group of people. This can be aligned with the philosophies of education that determine the nature of curriculum and delivery of instruction.

In order to be fair and fit students' learning needs and facilitate learning of all students, the curriculum should be adequately diversified. Diversification considers the fact that students in any educational system are drawn from diverse background with different academic, mental or physical abilities and needs. Diversification of the education curriculum is one among the strategies to accommodate the different ability levels and diversified needs of the students. Therefore, curriculum diversification is including different and various contents, methods, resources, and evaluation procedures in the education system and curriculum for production of functional members of the society (Offorma 2010). Diversified curriculum offers opportunities for learners to be exposed to varied knowledge, skills, attitudes and values. Mereku (2016) also noted that curriculum differentiation is among the strategies to address the needs and interests of learners in curriculum materials and pedagogical processes as curriculum contents, learning experiences, and methods for teaching and assessment techniques. Curriculum diversification assumes that various contents are included in the curriculum and relevant pedagogical approaches and evaluation techniques are used to organize curriculum experiences and employed in the schools to prepare students to become functional members of the society. In other words, curriculum differentiation allows curriculum experts and teachers to prepare comprehensive curriculum that can equip students with the essential knowledge, skills and competencies. Besides, curriculum differentiation considers the real representation of the three categories of the learning objectives and the

balance between the three domains throughout elements of a curriculum material. The task for the curriculum planners is therefore to do needs assessment and incorporate the findings in the curriculum materials. The needs assessment is to identify and balance representations of the demands of the students, society and the labor market in the curriculum.

Relevant of education is vital in improving accessibility of workforce equipped with the knowledge, skills and attitudes demands of further education and the labour market. If a curriculum material is dominated by either academic or vocational contents, it is difficult to bring well educated and skillful graduates to labor market and the next level of education. This calls for inclusion of work specific oriented experiences in academic curriculum. Supporting this, Opertti (2017) noted that curriculum should be comprehensive and structured around a clear and strategic vision of holistic and inclusive development of all learners aimed at equipping them with the essential knowledge, skills and competencies. It is also suggested to give profound thought to ways likely to create the best possible balance between general education and practical and vocational training so as to develop the whole child. There is an argument that assumes vocational contents and transeversal skills are equally important as academic contents to prepare students for the different positions. Supporting this, Schleicher (2011) asserts that, if the concern is to prepare students for future life, it is must to have a curriculum them help students to develop the various work skills allow them to join the different destinations based on their abilities and interest.

Preparation of students for work demands not only relevant curriculum (contents, learning objectives and learning experiences) but also it requires schools to teach relevant the skills students need to be successful in workplace. This demands teachers to employ pedagogical activities that are relevant and adequate to equip learners with the cognitive, interpersonal, interpersonal and social skills that are mandatory to survive in the world of work (Okoye & Udoudo 2015). At school level, teachers have the responsibility to ensure that all students are developing the competencies the world of work expect from employees graduated from secondary school. Hence teachers are required to have adequate content knowledge, pedagogical knowledge, and pedagogical content knowledge and skills (Bainton, Barrett & Tikly, 2016). Supporting this, Blomeke and Delaney (2012) identified cognitive abilities and affective-motivational characteristics as the two main components of teachers' professional competence. Similarly, to effectively deliver a lesson, teachers must have adequate understanding of cultural and social environment and students' background information (Cogill, 2008). Bainton, Barrett and Tikly (2016) argued that effectiiveness of teaching

depends on availability of instructional materials in the schools and effectiveness of teachers in using the resources with the aim of facilitating students' meaningful learning.

Most Africa countries including Ethiopia gave more emphasis to expansion of schools without giving attention to relevance of curriculum. As a result, failure to turn out students with relevant knowledge and skills has been the major problem of secondary schools in Ethiopia (Joshi & Verspoor, 2013) and in Africa at large. As part of enhancing relevance of education, recently, many Arica countries have introduced competencies-based curricula and encourage use of interactive teaching and learning strategies (Chisholm & Leyendecker, 2008). That is, competencey-based curriculum is suggested as one of the strategies to make the curricula more inclusive and prepare students with transferable skills (MoE, 2009). Teaching technical skills and core work skills require interactive student-centered approaches. For Care and Luo (2016), teaching methods that encourage interaction between students and with the physical environment help students to develop social skills, interpersonal skills and other higher order thinking skills that are relevant to the world of work.

Relevance should be examined with reference to the links between education and its integration with the world of work, and the skills and aptitudes necessary for an increasingly technology driven market place (Jacob & Lehner, 2011). In the same vein, Tedesco, Opertti, and Amadio (2013) argue that, if the education is irrelevant, curriculum contents and the teaching and learning process are increasingly perceived as outdated with regards to the knowledge, skills, attitudes and values (the competences) needed to live in an ever-changing world and a century that is filled with uncertainties. This implies that schools ought to deliver updated education that meet the demands of the technological change, consumers' demands and the shift to a knowledge-based economy, changes in the nature of work, the requirements of employers, and the skills that workers need. Moreover, what is taught, and how it is taught must be relevant, i.e. learning activities and environments must give learners the best possible opportunities for success and provide an appropriate curriculum and flexible delivery arrangements to meet their diverse needs (Colby, 2000). Availability of qualified and committed educational leaders, who effectively manage, coordinates, evaluates and facilitates instructional processes and resources is among the factors that contribute to effectiveness of a school aspires to prepare students for work. In summary, improving educational management, teachers' competencies and professional development, relevance of curricular and availability of facilities, equipments and resources, and strengthening capacity of

teachers in using learner-centered methodologies are among the efforts need to be considered to enhance relevance of education.

2.2 Purpose of Secondary Education

In most countries, following the primary level, the phase in the education continuum responsible for the development of the young people is secondary education. It is at this very education level that the knowledge and skills formed at primary school are more firmly embedded alongside the acquisition of values and attitudes. Secondary education is the level at which students are empowered to find their own paths to their own dreams that help them prepared for both today and the future world. Joshi and Verspoor (2013) noted that secondary education provides the optimum setting to prepare young people for effective and productive adult lives, including participation in social, political, and economic spheres. It is the phase in the education continuum responsible for cognitive, social and emotional development of the people during their adolescence age and empowers them to make a positive impact in the social, economic and political environments. Jacob and Lehner (2011) suggested that secondary education should give young people not only the academic knowledge but also the work skills and technical ability that encourage them to become effective in their future life and schooling. This can be possible when its curriculum and instruction are designed in the ways that it can satisfy a minimum employment and educational requirement for cognitive, social, emotional and personal development of students which prepare them for further education and for the world of work.

Traditionally, the main purpose of secondary education has been to prepare students for higher education. However, the role of education is not restricted to preparing students for the next level of education; it plays a great role in satisfying demands of the labor market. For this reason, secondary education is considered as the critical phase to prepare the labor force equipped with appropriate competencies, knowledge and workplace skills (UNESCO, 2013). Ndala (2006) stated that secondary education should be complete by itself rather than aiming exclusively at preparing students for a subsequent level of education; it should enable secondary school graduates to operate small businesses or to be employed without further qualifications. Ball, Joyce & Butcher (2016) also suggested that secondary education should provides students the fundamental competencies that are important for effective preparation for the proceeding academic or professional tertiary education as well as for those entering the world of work either as trainees, wage employees or as self-employed entrepreneurs.

Because of the level of development of the countries, the aim of education and goals of secondary education is different for different countries. However, the primary goal of education of most countries is to give learners opportunity to become equipped with the knowledge and skills that are important for their future individual life, education and work and fully participating members of the society. Opertti and Brady (2009) believe that secondary education promotes the development of skilled and knowledgeable citizens that are accessible not only to the national but also to the global world of work. To achieve these objectives, secondary education should accommodate students' needs, and provide a curriculum of sufficient quality and relevance that can ensure all school leavers have the skills and attitude necessary for a productive life (Jacob & Lehner, 2011). Effective secondary education provides learners not only with cognitive skills but also social skills that help them to effectively interact with the environment. In most African countries, the role of secondary education was to enable students develop the knowledge and skills that are important to prepare them for their future education and training. Nowadays, it is perceived as the level at which students develop competencies for work and further education, and hence, it serves as a bridge to the world of work and the next level of education (Taylor & Robinson, 2019). Therefore, two major roles are identified for secondary education to play in today's education systems. First, it serves as a platform for all young people to further develop the knowledge and skills that are needed in the world of work and next level of education. Second, it provides them with the qualifications that are important in the labour market and further learning. Such education must comprise a harmonious balance of academic disciplines, technical skills and transversal skills.

A key function of secondary schools is to prepare students for successful transition towards a future career path. This involves providing relevant curriculum and instruction that build students' general capabilities and specific work skills they require for work. In line with this, Baarrett (2017) stated that secondary education lays a foundation for the knowledge, skills, values, and attitudes that pupils need as new entrants to the world of work and start to contribute as adult member of a community. Similarly, as indicated in KG-grade 12 Curriculum Framework of Ethiopia (MOE, 2009), the goals of secondary education are to provide students identify their needs, interests and potential so that they can choose their fields of study, to continue further education and training, and to prepare students for the world of work. However, in Africa, Verspoor and Bregman (2008) argue that quality and relevance of learning and teaching in secondary education is highly linked to curriculum,

examination and assessment policies and practices. The examinations are designed to select academically high performing students for further education. Supporting this, Joshi and Verspoor (2013) argued that the current curriculum of secondary education is designed to prepare a limited number of students for higher education. That is, the curriculum was not intended to meet the demands of students who are not destined for higher education. The authors suggested that general secondary education curriculum should serve both those who aimed to continue to the next level of education which is the need of the large group of students and who decided to enter vocational program or the world of work upon graduation. Hence, to make secondary education accessible for all students and serve their interest and the need of world of work, curriculum developers should consider content differentiation and relevance of the curriculum.

Gradually attempts were made to change and improve the role of secondary education in Africa in line with the progress of development of the countries. The purpose of secondary education in Africa had been reflecting the other developed parts of the world that are fundamentally different from the conditions in Africa. However, few attempts have been made to define the essence of secondary education from the perspective of Africans. One of the attempts made was revision of objectives of secondary education. The abilities African young people need to developed and identified as objectives of secondary education are presented in Ndala (2006) as follows:

> *Secondary education in Africa should aim to develop in the African youth the ability think effectively; to communicate thought clearly; to play one's part as a useful member of one's home and family; to understand and appreciate one's cultural heritage; to develop economic efficiency both as a consumer and as a producer of goods; to acquire some vocational skill; to understand the world outside one's environment; to develop a scientific attitude towards problems; and to live and act as a well-integrated individual (p.2).*

Besides, the changed observed in the world of economy has changed the nature of the skills required to become successful in the world of work. At the end of the 20th century and in the beginning of the 21st, countries the world have been experiencing a transition to knowledge and information based economy. For this reason secondary education was required to meet demands of the 21st century and to play an important role in preparing new labor market entrants as a workforce and providing skills they need and develop throughout the working career. Accordingly, the goal of secondary education of some African countries was changed

and aimed to produce graduates who stand on their own feet after completing their secondary education, as employee of different organizations or by starting their own small businesses (Ndala, 2006). This demanded Sub-Saharan Africa countries to change their policies so that the knowledge, competencies and skills that are essential to prepare students for different destinations are emphasized in the aims of education. Aw & Mariro (2001) expalined the suggested aims of secondary education in Africa as follows:

> *The three key aims of secondary education in Africa should be to enhance adolescents' basic knowledge to raise their general education level; to prepare students for their harmonious integration into working, professional and social life; and to prepare students for higher education or technical and vocational institutions (as cited in Ndala, 2006:3).*

There is a shared opinion that the role of education in general and secondary education in particular should be improved along with the rapid change in science and technology, demnds of the society as well as the requirements of the labour market. In Ethiopia, however, the role of education has been changed mainly due to change of the ruling government and its aspirations (directly or indirectly). As indicated in education policy document (TEG, 1994) which was developed to improve quality, equity, access and relevance of education, the role of education is to bring learners' physically, mentally, socially, morally and emotionally development. The Curriculum Framework (MoE, 2009) developed to realize the policy intent also indicates that the role of secondary education is to prepare students for higher education and the world of work, that is, to equip students with the knowledge, skills, and attitudes that are mandatory to survive in their future life career. In other words, secondary education is aimed to equip students with the cognitive skills, social skills and emotional skills that are important in the workplace. The realization of the mentioned goals of secondary education requires the system to provide schools with relevant curriculum. The schools and teachers are also expected to integrate the skills employers require from graduates in their lessons and instructional activities. Many have got the chances to go to secondary schools, however, Binayew and Tadele (2016) argued that they had no opportunity to learn those things that are relevant to their life as the curriculum was either imported or imposed by foreign forces that had closer attachment with Ethiopia.

In order to help secondary school graduates adjust themselves to and compete in the contemporary work environment, schools need to integrate a wide range of skills in their textbooks and classroom instruction including critical thinking, problem-solving skills,

creativity, and decision-making skills (Ball, Joyce & Butcher, 2016). This implies that to prepare young people for work in a rapidly changing world secondary education curriculum needs to impart a broad range of competencies and transversal skills. These skills should include the key generic competencies, non occupation-specific capabilities, such as communication skills, the ability to learn independently, cooperation, attitude and ability to work in teams and self-management skills. The question of the work skills development to enter into the labour market should not be an exclusive role of technical and vocational education. To prepare secondary school students for work, fast growing developing countries have included the key competencies, 21st century skills and generic skills in their general (academic) education curriculum. Joshi and Verspoor (2013) observed that in many countries curriculum differentiation starts at lower secondary level (grade 7-9) and becomes more pronounced at upper secondary level to prepare students for different career paths, including postsecondary education programs/ higher education, and labor market. In Ethiopia, preparing students for work and identifying areas of educational interest are the major goals of secondary education not limited to general education (MoE, 2009). In order to help young people achieve these aims, secondary education and its systems need to focus on enabling them to develop into well equipped workforce in today's technology and knowledge based work environment and productive and responsible citizens. However, as described in the World Bank document, a 'one-size-fits-all' curriculum will not enable secondary school students having diverse abilities and aspirations to learn to their maximum potential (Joshi & Verspoor, 2013). Teaching the same content to a single group of students having different planned destinations will not enable the schools to achieve the purpose to equip students with the skills prepare them for work.

2.3 Secondary Education in Ethiopia

Secondary school education was introduced in different parts of Africa by Christian missionary groups before the colonial governments arrived and developed educational policies and established their own secondary schools. In Ethiopia, though the first modern school was to produce administrators, interpreters, and technicians, stronger emphasis was given to master different foreigner languages (Binayew & Tadele, 2016). As a result, the curriculum was mostly composed of language courses, such as French, Italian, Geez, Arabic and Amharic. During the British period (1941 to 1952), attention was given to human resource development and the aim of education was to produce a workforce that could serve in government office (Tekeste, 2006). To meet these needs, in 1943, the government

established the first Secondary School in Addis Ababa with some assistance from the British Council (Fassil, 1990). This school offered a full four-year secondary program and had two tracks. The first track was for university entrance and the second track was for technical training in vocations. Students were encouraged to join vocational secondary schools (such as agriculture, laboratory science and teacher training) through free food and lodging (Solomon, 2020). According to Tekeste (2019), throughout the 1940s and 1950s there were too many schools for students; and incentives such as clothing, school materials and boarding were quite common to attract students to join the vocational track that equip them with job-specific skills and prepare them for a specific profession. In the same manner, during the imperial regime, there were specialized vocational secondary schools intended to prepare students for vocational oriented career.

The first curriculum, which was inaugurated in 1946, was of 6 years elementary followed by 6 years secondary education (Alemayehu & Lasser, 2012). During the first two years, Amharic was the language of instruction for all subjects. It was in 1949 when the revised version of the first curriculum of the secondary school curriculum was issued and the structure of school was changed to 8-4 structure (eight years of primary education and four years of secondary education) and English became the medium of instruction. However, teachers who came from different countries with different backgrounds were took the responsibility to develop the curriculum. For instance, preparation of secondary school syllabus was entirely based upon the London School Leaving Certificate Examination without consider its relevance to Ethiopia (Sisay, 2016). As a result, the curriculum in place was criticized for its irrelevance and incapability to produce citizens who had the capability to adapt to and transform the heritage of the society to the new needs and to changing conditions of the country. The 8+4 school structure was mainly criticized for the reason that it provided only one type of education (Tekeste, 2019). Consequently, 6-2-4 school structure was introduced in 1963 and national examination was suggested to evaluate the achievements of grades 6 and 8 students. Alemayehu and Lasser (2012) stated that the national grade 12 examination, which is named as the Ethiopian School Leaving Certificate Examination (ESLCE) was introduced in 1954. However, there was no any evidence that showed the 6-2-4 structure allowed the schools to have diversified curricula and multiple tracks and different types of education at secondary school level and integrated the skills demand of the labour market in the curriculum.

A system of comprehensive secondary education was introduced in 1962 with assistance from the United States (Fassil, 1990). According to this system, students could be placed in either vocational or academic education streams. The vocational stream was designed to produce the potential workforce demand in commercial and technical fields. The basic idea behind the comprehensive secondary school was to give students who will not go to college due to different reasons the skills that enable them to be employed without a college degree. Although a larger number of comprehensive secondary schools were established, the new system could not be free from defective from the very beginning. As indicated in the document, diversification of education was taken as additional strategy to get relief from shortage of manpower (ibid). Technical School and Commercial School were established by the Ministry of Education as part of efforts to meet the manpower needs of the emerging industrial and commercial sectors (Alemayehu and Lasser, 2012). However, the syllabi of all subjects offered at secondary school had lack of relevance to Ethiopian needs.

The structure of Ethiopian education system between 1962 and 1994 was a 6-2-4 structure. It had six years of primary education, followed by 2 years of junior schooling and 4 years of senior secondary education. During the Socialist Derg regime, general polytechnic education was proposed with the aim of producing trained manpower and to improve the problem of unemployment of graduates (Fassil, 1990). The content of secondary schools education attempted to teach student vocational, academic and ideological courses. Five new subjects namely, agriculture, production technology, political education, home economics and introduction to business, together 12 subjects werel offered at secondary school lvel to meet the intended purpose and English language was perfered to be a medium of instruction from grade seven onwards (Tekeste, 2006). However, contents in the textbooks did not reflect the identified goal of education (Alemayehu & Lasser, 2012). This is to show how far the curriculum of the time was in contrast with the format of the curriculum of the Imperial period where students followed not more than seven subjects. At lower secondary school level the curriculum included Amharic, English, Mathematics, History, Geography, Civics, Biology, Physics, Chemistry, Physical education, Technical Drawing and Productive Technology (Solomon, 2020). Though technical and skill-oriented subjects are added to the curriculum, grade 9 and 10 curriculum of the time was criticized for most of its contents and learning experiences gave more emphasis to theoretical lessons than to practical ones. In the same way, the technical schools and the general polytechnic education programs were dependent on the interest of the donors of the socialist countries. Lack of relevance of the

curriculum and instruction to the skills demand of the labor market and needs of the society and the country was the major factor hindered the attempt to prepare the required workforce.

One among the aims of the 1991 Education Policy was to alleviate the problems related to relevance of secondary education. Consequently, preparing students for the next level of education and for the world of work are identified as the major goal of secondary education. According to MOE (2009) subjects offered at secondary education level (Grades 9 and 10) includes both natural science and social science subjects that are academic in nature, namely: Mother Tongue language, English, Amharic (as second language), Mathematics, Information Technology, Civics and Ethical Education, Biology, Chemistry, Physics, Geography, History and Physical Education. This implies that, unlike the Derg regime, secondary school education, the curriculum structure introduced as the regim and its ideology eliminated from its position was free from vocational oriented subjects. The upper secondary school (grade 11 and 12) had two tracks: vocational program and academic program. The academic track is divided into two streams: natural sciences and social sciences. Although, it is not guarantee to conclude as it is relevant to the skill demand of the world of work, it seems that vocational sujects are not adequately incorporated in the academic upper secondary school curriculum. Moreover, the second track, vocational education, which was designed to provide technical skills, faced challenge to meet its goal due to various reasons. Though there is hesitation to say we had perfect education system that can adequately prepared secondary school students for their future career, there was time before 1991 when education system of the country gave more attention to vocational and technical subjects than the existing curriculum structure. Nowadays, the vocational subjects are planned to be offered besides the academic subjects as elective courses with the purpose to prepare students for the world of work (for those who are not interested to or do not satisfy the minimum requirement (examination resul) that allow them to join higher education institutions. The problem that has been continuing with regime change or from generation to generation is lack of sufficient space for the mandatory and core work skills employers have been requiring from secondary school graduates in secondary school curriculum and instruction.

In summary, an education system is considered as effective when students are able to apply the knowledge and skills they have acquired through education in their daily lives and ready to develop more competencies and abilities in their future lives. This can be possible when the curriculum and instruction is relevant to the intended purpose and the time allotted is sufficient to prepare them for their present and future career. However, in Ethiopian and other African

countries, secondary education was inadequate to equip students with the competencies and skills that help them prepared for their future education and work. Moreover, the trend in Ethiopian education system and curriculum structure and its implementation show that the purpose of secondary education to equip students with the knowledge and skills required from a workforce were not attained because of the reasons emerged with the inauguration of the new policy or program or during the implementation phase. Most of the reasons have direct connection with relevance of the curriculum and pedagogical practices of the schools. Introducing new and changing or bringing back the structure of education/school or curriculum structure without examining the root causes of the system we have been experiencing did not enhance relevance of our education to the world of work. Hence, if the concern is to prepare students for work, the curriculum and instruction should comprise a harmonious balance of academic disciplines, generic/transversal skills, practical skills and social skills.

2.4 Secondary Education in Different Countries

In most contemporary educational systems of the world, secondary education comprises the formal education which is characterized by transition from the compulsory and comprehensive primary education to the optional and selective tertiary or post-secondary education (Kapur, 2019). However, secondary education presents some problems of definition in the sense that it falls between primary and tertiary levels, and there is no universal agreement where tertiary education begins and primary education ends. That is, the number of grades covered in secondary education varies; the grade at which secondary education begins and ends varies considerably in different countries (UNESCO, 2013). In addition, the duration of or the number of grades covered in secondary education varies from three years to eight years. The usual duration is, however, grade 7-12. It is also common to see when countries change the grade at which secondary education begins and ends from time to time. Most countries divide the secondary level of education into a first or lower segment and a second or higher segment.

Countries have their own general aims of education and goals for the different levels of education. Singapore, Finland, Vietnam and Germany are among the countries actively exploring how to identify, define, teach and assess the work skills demand of employers across the globe (Drake & Reid, 2018). For instance, as presented in the Education and Planning policy, Vietnam education is aimed at raising the people's intellectual level, training manpower, nurturing talent, and forming a pool of workers with knowledge and skills,

practical ability, and a dynamic and creative mind (UNESCO, 2007)). More specifically, the document indicates that the goal of education is to train independent and creative persons who can use their professional skills and knowledge to work hard and meet the need of national construction. This implies that education in Vietnam is aimed to provide knowledge and skills that prepare students for higher education and produce effective workforce. In Singapore secondary school curriculum and assessment system are designed to enable students to develop thinking skills and learning skills they require for their future lives (Tan, Koh & Choy, 2016). Consequently, secondary school students are given more chance to study subjects including economics, computer, design and technology, food and nutrition, art, music and drama. The goal is to provide a broad-based education where students are exposed to and be able to excel in different disciplines and ways of thinking.

Countries where quality of education is attained (relatively) within short period of time revised not only their education system but also their education policies and principles. For instance, in Germany and Vietnam, secondary education is highly vocationalized to prepare students for the different pre-university or pre-vocational education based on their interests (Fidler, 2017). Upper secondary education curriculum of the two countries is diversified to meet the interests of lower secondary school graduates. Secondary education in Vietnam is split up into two levels: lower and upper secondary school (UNESCO, 2007). The lower secondary education encourages lifelong learning, working together, identifying and solving problems, and prepare for upper secondary education, professional secondary, vocational training or workforce (Fidler, 2017). Upper secondary education helps students to develop basic, comprehensive and career oriented knowledge and skills. In Vietnam, pupils who have completed primary education have chance to move on to long term vocational training courses at vocational training schools for 1 to 3 years in length that enable them to enter the labour market as educated workers (UNESCO, 2007). Besides, after completion of lower secondary education, students have different options to join the next level of education. In addition to the academic education and technical and vocational education, Vietnam secondary education has two categories: professional secondary education and vocational training.

Singapore education system values students' holistic development of competencies including critical thinking skills, innovation, creativity, communication skills, collaboration, independent learning, lifelong learning, information and communication technology, and active citizenship (Tan, Koh & Choy, 2016). Similarly

to vetnam, Singapore secondary curriculum is diversified and vocationalized. In most of the OECD countries, there are three categories of secondary school (OECD, 2006). The objectives of the three categories of upper secondary school in OCED countries including Singapore are presented as follows:

> *The general secondary education program is not designed explicitly to prepare pupils for specific occupations or for entry into further vocational or technical education program. Pre-vocational or pre-technical education program is mainly designed to introduce learners to the world of work and to prepare them for entry into further vocational or technical education program. Successful completion of such program does not lead to a labour-market relevant vocational or technical qualification. Vocational or technical education program is to prepare students for direct entry into specific occupations without further training. Successful completion of such program leads to a labour market relevant vocational or technical qualification (as cited in Sahlberg, 2007: 8).*

In Germany, a key function of secondary schools is to prepare students for successfully transition toward a future career path (Fedler, 2017). Both lower and upper secondary education is aimed at producing knowledgeable and skilled workforce and preparing students for diversified academic and vocational fields of the next level of education (OECD, 2020). This involves providing curriculum that opens opportunities to build students' general capabilities, support students' interests and aspirations, and support them to make informed decisions about their subject choices and pathways. The four types of secondary schools in Germany are school of practical education, school for a mix of practical and liberal education, school for liberal education, and comprehensive school offering practical, liberal, and practical liberal education (Fedler, 2017). The assignment of students to the different types of school is based on the interest and ability of students. For instance, school of practical education emphasizes a practical, skill-based and nonacademic education for those children who show less promise in the academic sphere. School for liberal education is dedicated to a liberal, theory-oriented education for children with more academic promise. Students who have completed basic/lower secondary education have possibility to continue on to secondary vocational education, general secondary education, and high schools for gifted students based on their achievement. The different forms of upper secondary education takes 3 years (grade 10-12, or grade 11-13). At this level, students can select practical education (vocational), or liberal education which qualifies students for university, or

theoretical education (OECD, 2020). At the end of upper level secondary education, the school-leaving certification qualifies the student either for higher education or for entry into a profession, or in some cases for both.

In Singapore, the primary school curriculum is designed for a well-rounded learning experience that prepare students for the different types of secondary schools and secondary education provides a range of experiences encourage them to develop the skills, competencies and values that are essential to thrive in a fast-changing world (Tan, Koh and Choy, 2016). Similar to Vietnam and Germany, there are alternative secondary schools in Singapore: secondary normal academic (4-years courses), normal technical (5 years courses), integrated /special/ (4-years courses), and express (4-years courses) (Cohen, 2006). Pupils are placed in these secondary school courses based on their interests and academic performance. Core subjects, including English, mother tongue, mathematics, and science are taught across all streams. Besides, there is permeability across the different streams and they can offer one or more of the different academic streams (OECD, 2020). That means, there is flexibility in movement between courses in different streams.

Student preparation in Singapore starts at lower secondary school level based on their interests for the next level of education and the world of work by designing alternative curriculum structure (Cohen, 2006). In addition to the compulsory subjects, students are required to take one subject from the elective courses, such as Art and Design, Information and communication technology, computer science music and pastoral care. This realized that secondary school curriculum is future oriented and holistic and it emphasis the development of the whole child. The best lesson to be drawn from Singapore education system is that the upper secondary school curriculum is well aligned to the lower secondary curriculum. The assessment techniques and teaching and learning strategies employed in Singapore are also relevant and encourage students to develop practical skills and attitudes that enable them to become effective in the world of work.

In Germany, one of the purposes of lower secondary education is to prepare students for the upper secondary education, completion of which is required for vocational or university entrance qualification (Fedler, 2017). In Germany lower secondary education there are core subjects that are common in the three different schools and courses that are specific to the types of the schools. For instance, vocational education is one of the subjects suggested to be offered in lower secondary schools (Hauptschule and Realschue). In addition to the subjects that are common in most African countries, in Finland handcraft, home economics,

multimedia, health literacy, and art are the courses that are part of lower secondary curriculum (Raija, Annica & Susan, 2018). Thus, both in Germany and Finland, the purpose of making vocational courses part of lower secondary curriculum is to equip students with the knowledge and skills employers require from workforces and to prepare them for the next level of specializations.

The pre-university education in Finland is composed of basic education (comprehensive school) and upper secondary education, comprising general education and vocational education and training (Ustun & Eryilmaz, 2018). In comprehensive school, students study a lot of compulsory subjects and during the final grades of primary and secondary school, they can select optional subjects. Similar to Germany, the Finish lower secondary education curriculum is vocationalzed to prepare students for vocational upper secondary schools (Sahlberg, 2009). Besides, there are evidences that show comprehensiveness and diversification of Finland secondary education. For instance, at the lower secondary school, the curriculum consists of languages, Environmental studies, History, Religion or Ethics, Biology, Physics, Chemistry, Health education, Guidance counseling, Home Economics, physical education, music, crafts and arts (Raija, Annica & Susan, 2018). There is also more focus on ICT skills, well-being and daily life management in all subjects. Besides, there are schools that are specialized in a particular subject like: Art, Physical Education, Music, Language, Internationality, and Special pedagogy.

In Finland, students who have successfully completed compulsory education are eligible for general and vocational upper secondary education and training (Sahlberg, 2009). Vocational education provides students with the basic knowledge and preparedness to work in a vocation as well as important knowledge and skills for further studies. Similar to the Education system of Ethiopia, student selection to upper secondary schools is mainly based on students' grades in their basic education certificate. However, vocational institutions in Finland employ work experience and other tools, including aptitude tests as selection criteria (Raija, Annica & Susan, 2018). Moreover, students have the opportunity to complete both upper secondary school and their choice of vocational studies at the same time. For students who are interested in specializing, few specialized upper secondary schools exist. These schools tend to focus on certain subjects, such as the sciences, or arts, music or sports. Some aspects of Ethiopian secondary education and Finland general education are similar. For instance, upper general secondary education studies are more of theoretical and provide education mainly in humanities and natural sciences and the studies end in the national matriculation examination,

which provides eligibility for studies at higher education institutes (EDUFI, 2017). Students can begin vocational studies either directly after comprehensive school, after completing upper secondary education, or during working life. Felexibility is among the charcterisics of Finland's secondary education. For instance, those who have earned a vocational qualification can continue studies in universities and in universities of applied science (Sahlberg, 2009). The effort to prepare students for different destination is not limited to school and curriculum structure. As indicated in OECD (2010), Finnish classrooms emphasize the importance of learning through doing, and place particular emphasis on group work, creativity and problem-solving skills. Besides, from primary school onward, students are expected to work collaboratively on interdisciplinary projects. The learning environment is supposed to be physically, psychologically and socially safe, and support the student's learning.

In summary, the education systems of the countries discussed in this section are committed to prepare students for different positions based on students' interests and performance. The alignment bond between the different levels of education as a system is strong. For instance, the connection between primary curriculum and lower secondary curriculum or between lower and upper secondary education or between upper secondary education and the next level of education is strong. The school structure and the structure of curriculum of the countries work toward achievement of the identified aims of education and the specific goals of the different ladders of schooling. The learning areas and flexibility of the subjects to be learned and the nature of the instructional strategies prescribed for secondary education are relevant to prepare students for the world of work and the next level of education the graduates aspired to join after secondary school. In order to prepare students for work and different destinations, majority of these countries clearly identified 21st century skills as integral part of their curriculum.

2.5 Relevant Secondary School Curriculum and Instruction

Effective education systems align curriculum, pedagogy, and assessment, so that the different elements of the system work towards a common set of educational goals. Effectiveness of any education system is cumulative effect of relevance of the curriculum and teaching-learning process. No one can conclude effectiveness of education system by ignoring relevance of what the system provides schools and relevance of curriculum and pedagogical practices schools (Colby, 2000). There are two aspects of quality in education: quality of the education system as a whole including policies, schools and teaching and learning

environment) and quality of what the system offers to the students/learners, i.e. quality of curriculum and teaching and learning process). For those authors, improving quality of secondary education means improving educational management, facilities, equipment, and teacher competence, curricula and resource development (Jain & Prasad, 2018). Though quality is one of the pillars to improve the status of education and schools, it uses relevance as footstone. Therefore, relevant curriculum, instructional activities and learning environment and resources are the irreplaceable requirements to equip secondary school students with the competencies that the work environments require from them.

2.5.1 Relevant Secondary School Curriculum

It is widely believed that education in any country is designed to serve learners, parents, employers, the public at large, and eventually the nation. Curriculum is the central element to which all components in educational processes are aligned to achieve the purpose of education. According to Williamson (2013), curriculum describes the values, aims and content used to justify the education system and all of the educational processes. At its narrowest sense, it specifies the goals of learning. As discussed in Carl (2012) curriculum is defined as a totality of learning experiences that help students attain general skills and knowledge at a variety of learning sites. It is a material which is expected to explain competencies and skills to be acquired by students (Silva, 2009). Curriculum is what is learned and what is taught (content), what students be able to do (competencies), how it is delivered (methods), how it is assessed (exams), and the resources used (e.g., textbooks) (Marsh, 2009). Hence, curriculum should consist of everything that promotes learners' intellectual, moral, aesthetic, emotional, social and physical development. In addition, what is taught and how it is taught must be relevant and the learning environments must give learners the best possible opportunities for the attainment of the intended purpose (Colby, 2000). Supporting this, Bainton, Barrett and Tikly (2016) suggested that the schools must provide learners relevant experiences and learning activities that allow them to be equipped with the skills they need for work and for further education.

Relevant curriculum creates appropriate links between the curriculum contents and the student's real-life situation and encourages meaningful development of higher order thinking skills including analytical, critical and creative thinking abilities that prepare them for the world of work (Chu et al., 2017). Paige (2009) also identified some important skills, such as innovation skills, media, Information and Communication Technology (ICT), personal skills, thinking skills, learning skills and attitudes as the skills that are equally important for

students' future life. The ten core skills Alismail and McGuire (2015) identified as they are crucial to prepare pupils for their future career are identified are critical thinking, creative thinking, decision making, and problem solving, self-awareness, effective communication, interpersonal relationship, empathy, coping with stress, and coping with emotion. According to Colby (2000), a relevant curriculum emphasizes on local and national content, life skill and vocational skills, intrapersonal and interpersonal skills, student - centered, non-discriminatory and standard based curriculum structure.

Relevant curriculum maintains the balance between the three domains of learning (knowledge, attitude and skill). However, in order to prepare students for work the curriculum should gives emphasis to the higher order skills that are required in the world of work and the post secondary education. Sharma (2017) classified life skills that are important for young people future life, work and education into three broad categories.

> *Cognitive skills are the skill that enhances the logical faculty of the brain using an analytical ability, thinking creatively and critically, and developing problem-solving skills and improving decision-making abilities. Social skills include interpersonal skills, communication skills, leadership skills, management skills, advocacy skills, co-operation and team building skills, etc. Emotional skills involve knowing and being comfortable with oneself. Self-management skills in turn include managing/coping with feelings, emotions, stress and resisting peer and family pressure (p3).*

Vocationalization of education is one of the strategies to improve relevance of curriculum to demands of the world of work and to maintain balance between theory and practice in secondary school curriculum. According to Maclean and Pavlova (2013) vocationalized education refers to a curriculum which remains overwhelmingly general or academic in nature but includes vocational or practical subjects as a minor portion of the students' timetable during the secondary school course. The main objective of vocationalizing education is to prepare students for the world of work. However, as indicated in Ethiopian curriculum framework the major drawbacks that initiated curriculum designers to bring the new curricula were lack of relevance of some of the contents, problems in the assumed methodology of teaching, as well as difficulties in the implementation of relevant assessment tools (MOE, 2009). This confirms that, if the case is to prepare students for the world of work, the goals of education, curriculum, teaching strategies, and assessment techniques should be relevant to the skills demands of employers. In other words, the learning

competency included in the curriculum should realize capacity of learners to apply the knowledge, skills, attitudes and values independently in practical and meaningful ways, and the teaching and learning approaches should emphasize the development of all learning areas.

Diversifying curriculum is also among the solutions suggested to solve problems related to relevance of curriculum and instruction. According to Akram (2012) diversification is assumed as an effort to include practical (vocational) subjects in to their curriculum that are likely to generate among the students some basic knowledge, skills and attitudes that might prepare them to become skilled workers. A diversified curriculum structure in secondary schools is seen as a means to achieve equality of opportunity because it provides to a wider range learning areas to prepare students for a wider range of future activity than purely academic curricula. In most countries, upper secondary education is non-compulsory and offers students optional education paths. Supporting this, Joshi and Verspoor (2013) suggested that secondary education in Ethiopia need to allow students to study subjects at different levels of depth and choose electives courses that can prepare them for different career options. That is, the curriculum need to be organized in ways it prepare some students for university entrance, some for post secondary non university technical or vocational education and training programs, and others for the world of work. It is also suggested that curriculum content needs to be relevant to a labor market where meta-cognitive skills are at premium.

Vocationalization is designed to prepare students for the world of work better than does just 'academic' education. Hence, as discussed in Maclean and Pavlova (2013), to serve the diversified needs of students and the demand of the world of work, the curriculum at secondary education level should be divided categories: General/Academic education, vocational/technical education, and Pre-vocational or pre-technical education. The general/academic secondary curriculum and curriculum for technical/vocational schools are to develop general academic skills and jobs-specific skills, respectively. The diversified/comprehensive school is multipurpose organization that combines the objectives of an academic study and one or more vocational subjects under one roof. Most often comprehensive schools are originally academic secondary schools to which vocational content was inserted in the curriculum, with the objective of making the school more responsive to labor market needs and to serve a more diverse need of students.

Education must be relevance to the present and future needs and destinations of students in terms of the knowledge application and relevance to humanity (Marriott & Goyder, 2009). In

order to be fair and fits the diversified interest and learning needs students, the curriculum should be diversified. Hence, curriculum developers must differentiate a curriculum so they do not discriminate and serve only a select group of students. Curriculum differentiation is the process of preparing curriculum according to the different background of students who will use the curriculum and considering the ability levels of the students in one class. Colby (2000) noted that curriculum should focus on results or standards and targets for student learning provide and consider individual differences. Individual differences between learners become increasingly significant and problematic as students grow older; some of these differences are due to identifiable learning problems that may be amenable to solution, while others are simply evidence that children mature at different rates and differ in intellectual capacity (Joshi & Verspoor, 2013). Hence, secondary education curriculum must accommodate these differences; it must be learner centered rather than subject centered and incorporate strategies to cope with differences in learners' needs. As mentioned in the document, relevant curriculum provides means for individual differences and targets for students learning, inclusive to all students with diverse abilities and backgrounds, motivate the learner, and relate things to the real life of the learner and provide a means for future life.

The competencies and the learning areas of secondary education should be relevant and responsive to learners' need and expectations and target to meet the identified goals of education. However, Joshi and Verspoor (2013) argued that the current secondary curriculum in Ethiopia is not designed with universal access in mind; it is academically demanding and closely tied to university entry requirements. The problem was irrelevance of the curriculum to the diversified needs, backgrounds, abilities and destinations students. In order to alleviate the problem, the authors recommended that the curriculum must be learner centered approach and address the learners' needs and abilities, and must emphasize problem solving approach to encourage knowledge acquisition as well as skills development. If the schools are using student-centered curriculum, there is a probability for teachers to make the instructional activities learner-centered which enables students to acquire the intended knowledge and skills. A relevant textbook recognizes student-centered method, promotes self- directed learning and have objectives that are relevant to guide instructional activities to be takes place in the classrooms and activities for students that enhance mastery of the required skills. To sum up, relevance of secondary school curriculum is to the extent the needs and interests of students and demand of the labour market and the next level of education of education is addressed in thecurriculum. Thus, in order to prepare relevant curriculum, as suggested by

many theoreticians, policy makers, curriculum developer and other stakeholders should open opportunity for deliberation by increasing the category and number of participants in curriculum making process.

There was an attempt to enhance relevance of curriculum secondary education. The curriculum framework (MOE, 2009) identified seven key competencies that are considered as abilities and skills students need to live, learn, work and contribute both to their own community and to their country, Ethiopia. The key competencies that are identified to be part of curriculum are life skills, base-line skills, higher-order skills, participation and contribution, independence, adapting to change, and time management. The document suggests that students should learn to communicate and interact effectively with a diverse range of people and to have the ability to listen actively, recognize different points of view, negotiate and share ideas. Moreover, Chu et al. (2017) argued that the skills help students to be able to organize their own lives, make informed decision and be responsible for their own actions. Besides, the skills have great contribution to allow student value themselves as members of society and develop self-confidence as a result of hard work and achievement. Relevant curriculum maintains a balance between theory and practice, and encourages the use of a variety of teaching and learning methodologies so that different learning styles are accommodated and learners are given opportunities to consider, verify and practice what they learn.

2.5.2 Relevant and Quality Teaching- Learning Process

Effective and meaningful learning requires the presence and coherence among the key elements that together ensure quality instruction. This includes relevant and updated curricula, quality textbooks, trained and dedicated teachers, sound assessment practices and attractive learning environment. Carr (2005) stated that students' achievement of curriculum objectives depends, in part, on the nature and quality of instruction they encounter in the classrooms (cited in Olibie, 2013). Quality of instruction itself highly depends upon multiple critical components including quality of the teacher, the soundness of the curriculum, and the appropriateness of the teaching methods. Teachers' quality and effectiveness of their instruction are at the center of the education system. The highest quality teachers are those who have not only deep mastery of both their subject matter and pedagogy but also capable to faciliate their students learning (Nilsen & Gustafsson, 2016). The extent to which inputs can improve quality of learning is directly related to the extent to which teachers effectively use them to improve the teaching and learning process. The quality of instructional process is measured in terms of

teacher-pupil interaction and students-content interaction occurs during teaching-learning process by using the available resources. Cotton (2006) believes that effective instruction demands attractive classroom conditions, employing pupil-centered methods of instruction, a full mastery of the lesson content by the teacher, a calm and orderly learning environment, and availability of the basic materials needed for pupil activities and exercises.

A. Pedagogical Practice: Instructional Process

Central to the teaching and learning process are curriculum and instruction. The curriculum is the official learning structure that defines what pupils should learn, and instruction is the how of delivering the content. As stated in Opertti (2017), curriculum is what (content) is conveyed and how it is conveyed (ways in which it is transferred) in the educational process. In other words, curriculum is where teaching and learning of skills, knowledge and values should take place. Instruction is about how teachers and students interact with the curriculum content and the teacher delivers the lesson to students in school and classroom settings. The educational goal is attained through pedagogical processes in the classroom where knowledge, skills and dispositions are acquired.

Relevance of classroom instruction is seen as one of the most important factor in improving relevance of teaching and learning process. Interactive teaching methods that engage students with their own learning rather than rote memorization are vital to make pedagogical practice effective. The rigorous literature review conducted by Westbrook, et al. (2013) focused on pedagogy, curriculum, teaching practices and teacher education in developing countries show that student-centered active learning pedagogic approaches increase students' positive outcome. Ministry of education of Ethiopia also encourages the use of a variety of teaching and learning methodologies so that different learning styles are accommodated and learners are given opportunities to consider, verify and practice what they learn in order to give it maximum meaning (MOE, 2009). However, in many classrooms, teaching methods that facilitate active student learning rather than rote memorization seems a difficult paradigm for some teachers, but it is one of the main issues to be considered and needs to be put into practice, if to improve relevance and quality of instruction.

Quality education demands quality providers**;** capable and qualified teaching force in required numbers. Teachers are at the heart of education system; they are central elements in the process of achieving the desired goals of education. A productive teacher is the one with a solid knowledge of the subjects, interactive pedagogy, keen classroom management, and has the ability to provide students with helpful feedback and evaluation. Effective teaching is

determined by the individual teacher's knowledge of the subject matter and master of pedagogical skills, which create a strong positive effect on student achievement. In other words, quality teacher influences the quality of teaching in the class rooms. Cohen (2006) believes that the highest quality teachers are capable of helping their students learn, have deep mastery of both their subject matter and pedagogy. For this to happen, teachers require adequate preparation and needs professional training that enable them to understand the needs of the students and to assist them expertly in a more effective way. Teachers in schools are responsible to bring a large number of knowledge and skills help them to equip their pupils with the required skills in professional way. This requires teachers to be well educated and competent in their professional skills. The need for an adequate preparation in the subject(s) to be taught by a teacher is equally important to prepare students for panned destinations.

The existing curriculum framework of Ethiopia (MOE, 2009) suggests flexibility in teaching and learning methodologies and strategies. This requires a shift in teachers' thinking which enables them design and use varieties of more appropriate instructional activities to enhance students' participation during instruction. Westbrook and his colleagues believe that when teachers see pedagogy as a kind of communication with students, their teaching practices become meaningful, leading to positive outcomes for their students (Westbrook, et al., 2013). This helps the teacher to see classrooms as social entities where students interact with each other and their environment for learning and construction of knowledge. This requires them to work in groups and interact in social settings. The teacher's role is arranging learning materials and creating conducive learning environment by considering situation of learners so that they can interact with the content and other students properly. This demnad teacher to have a solid knowledge of the subjects, employ interactive pedagogy, the ability to manage classrooms and the ability to provide students with helpful feedback. Moreover, the role of a teacher is to make easy involvement of learners through learning activities to facilitate learner skill development and knowledge construction that are vital for students' future life.

Relevant knowledge, competencies and skills are considered as basic conditions to prepare students become productive citizens. In order to create technically and academically proficient workforce, all education providers must offer appropriate curriculum and instructional strategies. Teachers are fundamental to educational delivery and the quality of education depends largely on the quality of teaching and teacher effort (Carl, 2009). There are many strategies that can enhance both learning content and developing skills. Students

are also expected to be creative thinkers and problem solvers and have the skills necessary to function effectively in society and in the workplace. Connecting content knowledge and instructions with the real-world problems and situations enable students to see how what they are learning is related with their lives and demands of the labour market. Thus a teacher should create opportunities that force students to be engaged with authentic activities that are relevant and reflect the world outside the classrooms. Developing life and career skills by creating opportunities for students to become self-directed learners who take responsibility for their own learning and who learn how to work effectively with others (Blumberg, 2007). This informs teachers to change the focus for their instruction to lead students to develop the generic skills that prepare them to confront the challenges of the world of work. In this regard, the role of teacher in helping students to develop relevant skills should shift from teaching to facilitating students learning.

Teachers' understanding of the theories of learning determines effectiveness of their pedagogical practices. Constructivists' strategy is based on the belief that learners construct their own knowledge through interaction and the assumption that knowledge is physically and mentally constructed by learners who are involved actively in learning process (Elloit et al. 2000). According constructivists' theory, effectiveness of pedagogical practices demands three strategies: teachers giving feedback and paying sustained and inclusive attention to all students; creating an environment where students feel safe; and teachers draw on students' backgrounds in their pedagogic discourse (Westbrook, et al., 2013). However, the literature review conducted on pedagogy of developing countries indicated that teachers use in practice a combination of student-centered and teacher led pedagogical approaches (ibid). According to Elloit et al. (2000), the pedagogical practices, such as interactive group, pair work, student questioning and project work are categorized under learner-centered active method. In applying these approaches, the teacher is expected to facilitate active learning by motivating students to construct their own meaning and understanding. But the other instructional practices seen to have positive outcomes but categorized under teacher-centered method are discussion involving students in between teacher presentation (interactive lecture), demonstration and teacher questioning.

Constructivism is typically contrasted with a transmissions (or objectivist) model of learning. That is, instead of focusing on learning objects which are transmitted from one person to another, students and teachers are engaged in a community in which learning is the result of

interactions, reflections, and experiences (Reynolds & Harel, 2011). The constructivist approach views knowledge as an entity, which is mentally constructed via the actions and experiences that the learner undergoes with the immediate learning and social environments (Eillot et al., 2000). The role of the teacher in constructivist classrooms is to organize information around big ideas that engage the students' interest, to assist students in developing new insights, and to connect them with their previous learning. The activities are student-centered, and students are encouraged to ask their own questions, carry out their own experiments, make their own analogies, and come to their own conclusions.

Teaching and learning about work skills requires interactive, participatory methods. Since skills are by definition related to actions and behavior, the development of the skills require active involvement of learners. Schleicher (2011) argued that there is a need for a paradigm shift in quality pedagogy. To enhance students learning, the curriculum in use and the pedagogy and assessment teachers employ should be structured around the notion of learning to learn and ways of thinking. Also, schools required to have teachers with high-level professional knowledge. Clear and well-structured classroom, a supportive climate and individualized instruction and higher order thinking are also among the pillars of quality instruction essential to equip students with skills they need for future career (Elliot et al., 2000). Similarly, Ministry of education of Ethiopia suggested that the teaching and learning approaches should emphasize on the development of competencies students need for future career (MoE, 2009). As indicated in the document, competency is taken as the capacity of learners to apply knowledge, skills, attitudes and values in independent, practical and meaningful ways. Therefore, constructivist theory of learning and philosophy is reccommended to designed curriculum and instruction that are essential to identified and incorporate the skills required in the world of work and to prepare them for further education.

B. Assessment

Assessment in education is defined as a process of gathering evidence, making judgments and drawing inferences about student's achievements and performances. Awofala and Babajide (2013) define assessment as any procedure or activity that is designed to collect information about the knowledge and skills of the learner or group of learners acquired. It focuses on what students know, what they are able to do, and what values they have when they receive their education. Assessment procedure usually undertaken by a teacher to find out whether students have learnt what they expected to learn and the extent to which learning objectives have been attained. It also helps a teacher to collect data about the outcomes of

his/her teaching and uses the outcomes for further improvement. Mainly it is pecieved as the process of understanding and improving students' learning (Oakleaf, 2009). Assessment as a process needs defining, selecting, designing, collecting, analyzing, interpreting, and using information to increase students' learning and development. The key issue in any assessment process revolves around fitness for purpose. Hence, no assessment is considered good or bad, but rather, it should be judged on how well it satisfies its intended purpose. Among the different assessment methods, Winarso (2018) asserts that authentic assessment is the one which evalautes students' learning with real world environment and this assessment determines the level of mastery of students on a defined skill. Fox et al. (2017) believe that authentic assessment enhance students' communication skills, critical thinking skills, problem-solving skills and the ability to work with others, practical skills that are essential in world of work. At secondary school level, therefore, the assessment tools the teachers construct and administer should be to understand the extent to which pupils develop the skills the workplace requiring from secondary school graduates.

Effective education systems align curriculum, pedagogy and assessment, so that different elements of the system work towards a common set of educational goals. This informs curriculum experts to maintain alignment between curriculum elements. Curricular alignment is about the degree to which expectations (objectives) and assessments are in agreement and serve in conjunction with one another to guide the system toward students learning what they are expected to know and do (Care & Luo, 2016). In a classroom setting, instructional alignment refers to agreement between learning objectives, instructional activities, and assessments so they are mutually supportive. Therefore, assessment must allow students to demonstrate the knowledge and skills with respect to the expectations set up in the curriculum frameworks so that proper interpretations of their performance can be made.

The primary purpose of assessment is to help teachers in enhancing pupils' learning by providing information about the knowledge, attitudes and skills they have acquired. According to Alufohai & Akinlosotu (2016) assessment help teachers to make educational decisions about students, give feedback to students about their progress, judge instructional effectiveness, and to inform policy. Assessment tools and its procedure should go in line with the goal of education. As discussed earlier, secondary education is to prepare students for the world of work. The world of work demands the competences that are categorized under the three domains of learning; cognitive, affective, and psychomotor domain. Hence, the

assessment tools preferred by teachers should evaluate the extent to which students acquired theoretical knowledge and practical skills.

Effectiveness of learning is determined by quality of assessment practices in the classroom (Koh, 2011). For assessment to be meaningful, it must be well-aligned to the valued type of learning. For example, factual knowledge examinations are well suited to assess the outcomes that are based on rote learning and knowledge transfer. However, assessment tools that encourage recalling and reproducing facts are less important to develop competencies to synthesize, transform and apply learning in real world situations, think creatively and critically, collaborate with others, communicate effectively and adapt to rapidly developing environments. Ghaicha (2016) asserts that performance assessment is a quicker measure of students' ability than are conventional forms of testing. Villarroel et al. (2018) explained that authentic assessment provides students the opportunity to practice competences and skills that are essential in the world of work. It gives considerable information about teachers' performances, student achievement and the success of instruction. The performance assessment is to measure a range of integrated knowledge and skills by asking students to perform a task rather than to provide a paper-pencil based correct answer. Raymond et al. (2013) explained that authentic assessement help teachers to addresses the skills and abilities the students need to perform real tasks and requires students to apply what they have learned in a similar situation that occurs in the actual workplace. This form of assessment may include open-ended tasks such as oral presentations, essays, experiments, projects, problem-solving assignments and portfolios.

In education, assessment is an essential component of classroom teaching-learning process. In order for educational assessment to be functional, its interdependence with curriculum and pedagogy needs to be understood (Care & Luo, 2016). At classroom level, assessment is used by a teacher to obtain information about students' knowledge and performances as a group or at individual level using a variety of assessment methods to determine the extent to which students are achieving the target instructional outcomes (Gronlund, 2006). Sound educational assessment requires a clear conception of all intended learning outcomes of the instruction and a variety of assessment procedures that are relevant to the instruction. Its effectiveness depends on teachers' competence, knowledge, and practices due to the continual interaction between the dimensions (Care & Luo, 2016). Continuous assessment is one of the tools that have great potential to assess students' theoretical and practical achievements. Assessment is not focused on cognition or academic skills alone, but embraces the cognitive, psychomotor

and affective domains by which a learner is assessed as a total entity using different techniques (Alufohai & Akinlosotu, 2016). As observed in many schools, however many teachers and educational expertise continue to rely almost exclusively on traditional paper and pencil tests of factual knowledge that tend to promote rote memorization rather than higher order thinking skills and the skills employers require from secondary school graduates.

Effective teachers are skilled not only in instructional methods, but also in using assessment techniques that allow them to assess student learning according to intended learning objectives. It is important to note that in all assessment tools and techniques, both performance assessment and assessment of the factual knowledge are equally important to evaluate achievement of the different domains of competences. Performance tasks are hands-on activities that require students to demonstrate their ability to perform certain actions. Fox et al. (2017) describe authentic assessments as the one that ask students to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills. This category of assessment covers an extremely wide range of behaviors, including experiments, gathering information, tabulating and analyzing data, interpreting results, and preparing reports or presentations. Performance based assessment is essential to evaluate to what extent students acquired the knowledge, attitudes and skills the world of work demand from secondary school graduates.

C. Relevant and Adequate Learning Environment

Learning environment refers to the diverse physical locations and psychological contexts and cultures in which students learn. It is the space allocated for teaching and learning and an important aspect that needs to be considered to ensure effectiveness of learning and its outcomes (Ahmad & Amiru, 2017). Positive learning outcomes happen in quality learning environments. It is not only the input materials, building, class size, textbooks, library, laboratory, or technology alone that assures or enhances quality for any meaningful learning to occur, the environment must be conducive for such learning (Colby, 2000; MOE, 2002). Quality learning environment promote intellectual activities, interaction, generation of ideas, cooperation, encourage learning, growth and personal development of students (Serris & Miller, 2011). Many findings also reveal that a positive relationship between learning environment and student achievement, learning outcomes and student development (Evans, 2006). Providing teachers with relevant and adequate instructional resources and facilities enable them to increases the range of approaches and activities that they will utilize to engage

students in learning activities and opportunities. In most African countries, however, secondary education is facing three common problems: inadequate infrastructures, improper (irrelevant) equipment, and limited laboratories and qualified staff (Colby, 2000). To produce school leavers who are functionally ready for work demand schools to have adequate and relevant instructional materials and psychological learning environment. School learning environment can be represented as physical facilities for learning and for psychological and emotional needs of the learners.

Positive learning outcomes happen in quality learning environments. There are three principal elements that constitute learning environment (Evans, 2006). Learning environment includes the physical aspect, the psychosocial and service delivery elements. Supporting this, Colby (2000) noted that the learning environment includes the social, physical, psychological and pedagogical context in which learning occurs. Cotton (2006) defined learning environment as the social, physical, psychological and pedagogical context in which learning occurs and which affect student achievement and attitudes. Hence, it is not only the quality of physical environment of the classroom but also the social environment and interactions between teachers and learner that affects the learning and teaching processes. Cohen (2006) stated that quality and adequacy of infrastructure and facilities, human resource, inclusive environment with tolerance for diversity and school management are the major elements that are crucial to maintain quality and relevant education. A school learning environment is broadly characterized by its facilities, classrooms, school-based supports, and disciplinary policies and practices (Williams et al., 2008). The school leadership and management also have a key role to maintain the quality learning environment. To sum up, at school level, quality and relevance of physical and psychological environment infulence the learning environments that impact realization of the goal to prepare students for the world of work.

i. School Physical Environment

Physical learning environments, in which formal learning occur range from relatively modern and well-equipped building to open air-gathering places (Colby, 2000). Since both environment and teaching and learning resources and facilities play a significant role to bring quality education, a learning environment must be designed in a way to will support all students learning process (Evans, 2006). To function effectively, therefore, schools need relevant and adequate human and material resources. Teaching and learning materials and equipment as well as facilities, good and adequate physical structures are the fundamental resources for realization of goal of education (Maxwell, 2007). Moreover,

teaching aids such as visual aids, audio materials and audio visual aids believed as materials that assist and support student' learning and increase their success. These resources exist in schools in different nature, shapes and sizes, but they all have in common the ability to support student learning.

Relevance of an educational system is determined in terms of the nature of its inputs (students, teachers, facilities, equipment, and supplies), educational objectives, curriculum and educational technologies, and its learning environment. The learning materials available within an educational institution have positive relationship with the quality of teaching and learning activities which in turn leads to the attainment of the identified goals of education **(**Cohen, 2006)**.** School material and facilities such as classrooms, library and laboratory, and instructional materials (text books and reading materials, etc.) are considered as influencing elements in determining quality and relevance of teaching learning process. Ministry of Education (MoE, 2002) categorized infrastructures, water, latrines, clinic, library, pedagogical center and laboratories as school facilities. Infrastructure includes classrooms, study rooms, offices, toilet rooms, water, electricity, and service. Davies et al. (2013) believe that physical environment of a school including presence of adequate instructional materials, clean water supply, electricity supply, classroom maintenance, space and furniture availability, and adequate library are the materials and facilities are vital to facilitate students learning. Quality of the school buildings and furniture can determine how long such will last while comfortable classrooms and adequate provision of instructional resources facilitate teachers' instructional task performance and students' learning outcomes. In supporting this, Read (2007) stated that infrastructure and facilities, including school buildings, number of rooms, furniture, black board, water, and electricity have significant contribution for effectiveness of students' learning. The school facilities play fundamental role in attracting students and to ensure that students learn in steady environment. That is why in Africa counties including Ethiopia (MoE, 2002), the minimum standard facilities each school should have separate latrine facilities for boys and girls, adequate water supply for washing and drinking, counseling services for personal education related problems, adequate library and laboratory facilities appropriate to the level of education and sufficient playground. However, lack of instructional resources and facilities are among the problems schools in Africa countries are facing.

The physical characteristic of a classroom is among the factors that affect classroom learning environment. The Physical environment of a classroom influences the students' behavior and

the relationship between teachers and students and classroom interactions. Hence, relevance and adequacy of instructional materials and classroom facilities and the quality of the physical classroom setting significantly affects academic achievement of the students. In order to facilitate students' learning, educators must realize that there are many elements that influence the condition of the school and students learning. That is, if the goal is to encourage cooperative learning, the physical space and equipment must correspond to the requirements of active learning strategies including availability of instructional materials and classroom facilities (Brooks, 2012). Moreover, education institutions must have adequate access to outside classroom facilities such as clean drinking water and proper sanitation facilities, adequate lighting, ventilation, heating, as well as drainage line and equipments. Cohen (2006) recommended that schools must provide a secure environment within which the students feel that they are protected and safe from physical and psychological harm. Sufficient facilities promote academic achievement and ensure to strengthen the overall academic achievement of schools. While unattractive and old school buildings; cracked classroom walls and floors; lack of toilets; lack of desks and benches; lack of proper security system; lack of drinking water; lack of power supply; lack of playgrounds; lack of sufficient classrooms; overcrowded classrooms; lack of educational technology, etc negatively affect academic achievement of the schools **(**Ahmad & Amiru, 2017). Therefore, quality and the level of availability of educational facilities determine quality of education and academic achievement of students.

ii. Psychological Environment

Psychological environment is one of the main factors that have special place in teaching and learning process. Ozerem & Akkoyunlu (2015) stated that the learning environment affects students' behavior and their social interaction. Safe and peaceful environment with fair and clear rules for a well-managed and orderly learning and playing space is where students are protected from disturbances and mistreatment from teachers and school managers. Cohen (2006) argues that psychological environment of learning; classrooms, teachers support and social features have significant effects on students learning behaviors, beliefs related to self, application of strategies and attainment of goal, academic and social motivation. It implies that classroom psychological environment has essential and potential role in students' academic, social and behavioral performance (Williams et al., 2008). The empirical study by Cohen (2006) conducted realized that the school environment affects more than just academic performance; it influences students' emotions and health behaviors as well. That is,

a positive school environment enhances motivation, increases educational aspirations and improves attendance and retention. In contrast, an unhealthy school environment in which rules are unclear or arbitrary, bullying is accepted if not condoned, and teacher attitudes are indifferent, hostile or unnecessarily punitive is likely to cause high absenteeism, misbehavior and interpersonal aggression (Colby, 2000). Cohen (2006) also argued that the physical and psychological safety, positive interpersonal relationships, recognition of the needs and success of the individual, and support for learning are all part of a good psychological school environment.

School environment and teaching-learning facilities and resources in school are fundamental aspect in education (Vinales, 2015). A suitable and comfortable environment plays a significant role in learning and results in better educational outcomes. Maxwell (2007) suggested that the design of learning environment should promote effective learning and create learning opportunities of students. Within schools and classrooms, a welcoming and non-discriminatory climate is critical to creating a quality learning environment. Supporting this, Colby (2000) asserts that inclusive learning environment improve learning opportunities for students of all abilities and backgrounds. He extends that inclusive environment is an environment where a nurturing atmosphere, care and attention to students with different ethnic, socio-economic and religious backgrounds and different learning abilities and needs are addressed. Evans (2006) believes that if students psychologically feel comfortable in school, with adequate security and a friendly environment, they enjoy learning; this leads to better academic performance and achievement. According to Cohen (2006), teachers must ensure that they create positive learning environments that serve as the second home for students and teachers have the authority to ask students if they are not performing well or meeting the requirements. The role of a teacher is, therefore, strives to work on creating a positive learning environment and create classroom positive classroom climate that will assist in creating the desired students behaviors in the classroom and schools encourage them to develop the skills they will need in the world of work.

2.6 The Labor Market and Curriculum for the World of Work

Education plays an important role in preparing labor market entrants as the workforce and in providing skills upgrading throughout their career. And, an education system is effective to the extent it equip students with the knowledge and skills they need to become successful in the world of work. Hence, educational institutions are required to provide students with the competencies that are relevant to the world of work. Secondary schools prepare students for

labor market and the world of work when the system offers the schools with relevant curriculum and the schools deliver instruction that are appropriate to equip students with the expected work skills.

2.6.1 The Labor Market and the Work Skills

Manufacturing industry, agriculture, construction, business sectors, services and public sectors are among the labour markets inviting secondary school graduates around the world (International Labour Organization, 2016; Seetha, 2014). The three main sectors in the formal Ethiopian economy that offer the most opportunity for employment for youth are construction, manufacturing, and the services sector (Education Development Centre , EDC, 2018). The top five manufacturing industries in Ethiopia are apparel / textiles, leather, agribusiness, metal products and wood products. Road projects and housing projects are among the construction sector activities that have been opening employments opportunity for secondary school graduates. The research conducted by Berhe and Tsegay (2018) identified that the share of services, industry and agriculture contributed 68.5%, 23.6% and 7.9% of the total employment rate of the country, respectively.

In Ethiopia, the unemployment rate and its trend significantly vary across the levels of schooling. The research conducted by Berhe and Tsegay (2018) depicted that the unemployment rate was the highest for secondary school graduates (38%), followed by those who completed primary education (27%). The data collected by the same authors regarding the distribution of industrial employment by level of education shown that secondary school graduates constitute the second highest employment share (29%). However, the biggest challenge in today's education system is to generate graduates who have balanced knowlwdge and skills: technical skills and employability skills (Bennett, 2006 cited in Fajaryati et al., 2020). The limited jobs opportunities opened for those who aren't ready to continue with the next level of education demand employees to posses the non-job specific skills. The findings of the Labor Market Assessment conducted by EDC also indentified that there is a need for good relevant work readiness skills or soft skill and employability skills (EDC, 2018). That is, in addition to the technical skills, to be successful in the world of work, young people need to possess non job-specific transversal skills. Even though different terminologies are used to describe transversal competences (for example, 21st century competences, key competencies, generic competencies, and employability skills), all have similar connotations and compositions. Voogt and Roblin (2012) defined transversal competencies as an integration of the knowledge, skills, attitudes, and values that all young

people are required to have to be effective workforce.

Historically hard skills or technical skills are perceived as the only skills necessary for career employment (Robles, 2012). The focus given to knowledge acquisition in academic subjects caused students to lack soft skills that are necessary to be successful in the workplace. Soft skill is an umbrella term for skills under three key functional elements: people skills, social skills, and personal career attributes (Vasanthakumari, 2019). They are nontechnical skills, abilities and traits required to function in a specific employment environment. Soft skills are a combination of people skills, social skills, communication skills, character or personality traits, attitudes, career attributes, social and emotional intelligence, intelligence quotients, that enable people to navigate their environment, work well with others, perform well, and achieve their goals with complementing hard skills (Rychen, 2016). Wilhelm (2004) defined soft skills as skills, abilities and traits that pertain to personality, attitude and behavior rather than to technical knowledge (cited in Glaittli. 2018). The same author added that attributes that are important to ultimately empower secondary school graduates to become effective workforce are also elements of soft skills.

Employability skills are competencies job seekers need to have to enter more easily into the labor market and to improve their ability. Fajaryati (2020) defined employability skills as a set of skills, knowledge and personal attributes that make an individual (graduates) more likely to gain employment and be successful in their chosen occupations, which benefits themselves and the workforce. Communication skills, personal qualities, core work skills, process skills, technical skills, higher order thinking skills, social skills, and generic skills that are essential to perform a particular job are categorized as employability skills (ibid). Wagner (2008) named critical thinking, problem solving, collaboration, agility and adaptability, initiative and entrepreneurialism, effective communication, accessing and analyzing information, and curiosity and imagination as survival skills the modern workplace expecting from the workforce.

Today's labor market demands employees those who have not only knowledge of an academic subject but also it requires the work skills. According to Brewer (2013), the skills the world of work requires from employees are categorized in to foundational skills, vocational or technical skills, and personal skills. Basic/fundamental work skills includes the ability to learn and adapt; read, write and compute competently, listen and communicate effectively, think creatively, solve problems independently, manage oneself at work, interact with co-workers, work in teams or groups, handle basic technology, and lead effectively

(UNESCO, 2016). These skills are recognized as a prerequisite for continuing in education and training, and for acquiring transferable skills and technical and vocational skills that enhance the prospect of getting jobs. Technical skills include the ability to work well with others, the ability to organize, self-motivation, and a basic capability to use information technology. Moreover, Brewer (2013) categorized individual attributes that impact on work habits such as honesty, integrity, and work ethic under professional and personal skills.

Brewer (2013), having reviewed dozens of lists of work skills drawn from enterprise/employer surveys across sectors and around the globe identified the skills that most often required by employers in most or all contexts. The core work skills that are identified in his review are related to cognitive skills, affective/interpersonal skills and intrapersonal skills. Similarly, the study conducted by Esther et al. (2018) reveals that communicationskills, creativity, critical thinking skills, and problem solving skills are the four most frequently mentioned skills within national policy documents of the 152 countries. In addirion to these skills, information technology, social skills, and entrepreneurship skills are included in the policy document of the countries. This indicates that the countries are identified a wide range of skills to be part of their education beyond the academic areas. According to Care and Luo (2016), transversal competencies are categorized in to five broad domains of competecies, skills, values and/or attributes.

Figure 1: Categories of Transversal Skills

Domains	Examples of key skills and competencies
Cognitive skill	Critical and innovative thinking, creativity, decision-making, reflective thinking, entrepreneurship, resourcefulness, application skills, and reasoned
Inter-personal skills	Communication skills, teamwork, collaboration, organizational skills, sociability, collegiality, empathy, compassion
Intra-personal skills	Self-discipline, ability to learn independently, flexibility and adaptability, self-awareness, perseverance, self-motivation, compassion, integrity, risk-taking, self-respect
Global citizenship	Awareness, tolerance, openness, responsibility, respect for diversity, ethical understanding, intercultural understanding, ability to resolve conflicts, democratic participation, conflict resolution, respect for the environment, national identity, sense of belonging
Media and information literacy	Ability to locate and access information through ICT, media, libraries and archives, express and communicate ideas through ICT, use media and ICT to participate in democratic processes, ability to analyze and evaluate media content.

Source: UNESCO Framework for Transversal Competencies

As presented in Pellegrino and Hilton (2012), these skills are categorized under three broad domains of competencies: cognitive, interpersonal and intrapersonal domains. Though different categorizations are made and many terminologies are used to describe the competencies and skills, the skills that are grouped under the three domains of competencies (cognitive, interpersonal and intrapersonal skills) are identified for the purpose of this research based on the survey (analysis) conducted to identify the skills highly demanded by most employers (sectors and industries) around the globe (Esther et al., 2018; Joynes, Rossignoli, & Fenyiwa, 2019).

Critical Thinking Skills

Critical thinking is among the skills employers and the world of work demand from workforces. Brookfield (2012) defined critical thinking as a process of questioning and reflecting on experiences which allows students to become effective thinkers. Ability to analyze problems, investigate questions for which there are no clear-cut answers, evaluate different points of view or sources of information, and draw appropriate conclusions based on evidence and reasoning are also among the benefits critical thinking skills. On the other hand, it requires a set of higher mental processes that augment students' capacities in problem solving (Joynes, Rossignoli & Fenyiwa, 2019). Supporting this, Khalifa (2009) argue that the ability to think critically requires students to develop skills of asking and answering questions, solving problems that will foster application, analysis, synthesis, and evaluation as the elements of critical thinking. Critical thinking requires students to collect, critically analyze, interpret, and rationalize large volumes of conflicting information to the point of making an informed decision and taking action. On the other hand, Scott (2015) asserts that critical thinking skills allow students to develop many additional skills that help them to be fruitful in their academic life and workplaces.

The knowledge era demand people to possess higher order thinking skills involving the ability to think logically, to solve problems by identifying and describing the problem, and critically analyzing the information available, and to create formulate creative solutions. In context of the 21st century, critical thinking skills is described as the ability to manage projects, solve problems, and make effective decisions using a variety of tools and resources (Fullan, 2013). According to Fullan and Scott (2014), critical thinking demands critically evaluating information and arguments, seeing patterns and connections, constructing meaningful knowledge and applying it in the real world. Similar to problem-solving, critical

thinking demands analytical thinking, analysis and evaluation of evidence, ability to provide solutions in given challenges, higher-order thinking, and sound reasoning to make informed decision (Chalkiadaki, 2018). For Saavedra and Opfer (2012), critical thinking skills involves accessing, analyzing and synthesizing information and draws on other skills such as communication, information literacy and the ability to evaluate and interpret evidence.

Critical thinking encourages learners to move beyond lower-order thinking. This higher-order level of thinking naturally demands the curriculum experts and teachers to transform the curriculum and their teaching in the ways it encourages learners' to develop the ability to take their learning into their own hands. In other words, developing critical thinking skills requires teachers to teach learners how to learn on their own. Brookfield (2012) believes that creating a classroom environment that encourages questioning, probing, applying, analyzing, synthesizing, and evaluating will advance critical. Scholars argue that critical thinking does not develop independently without instructional assistance during a course of study and doesn't arise solely from reading texts and taking exams or by listening to a teacher's lecture. Instructional strategy that encourages interactions between individuals, participatory and active teaching and learning methodologies and school environments all support the development of such skills. Terzieva, Luppi and Traina, (2015) suggested interactive learning environments that facilitate active learning to teach transferable competences. As suggested by constructivist learning theories, they also believe that learners can develop key competences, if they learn through authentic activity, rather than solely through instruction.

Problem-Solving Skills

Job seekers and employees in the 21st century must be able to find logical solutions to problems and give effective and evidence based decisions (Suarta et al., 2017). Problem solving is the basic cognitive process for identifying the nature of problems, assessing different options, and making informed choices when there is no clear or routine solution (Alina, Michael, Kim & White, 2018). It requires acquiring and evaluating information to solve different kinds of difficulty including unfamiliar problems in innovative and conventional ways. According to Voogt and Roblin (2010), problem-solving skills include recognizing long-term consequences of solutions to problems and probing, devising, implementing, and evaluating a plan of action for problem resolution. More specifically, it requires the ability to identify, analyze and define problems, to know and apply strategies for dealing with unfamiliar problems, to generate, analyze and select problem-solving strategies, and to make justifiable decisions.

Brewer (2013) argued that in order to succeed in the workplace (and in life generally) individuals need to be able to evaluate information or situations; break them down into their key components; consider various ways of approaching and resolving them; and decide which is the most appropriate. Problem-solving is among the core skills that are relevant to most academic activities and tasks in the workplace. Problem-solving skills allow students to investigate problems, provide explanations, generate ideas, analyze data, and make judgments in order to find the appropriate solution, problem-solving skills (Alismail & McGuire, 2015). There is an assumption which explains the presence of a significant correlation between problem-based learning activities and the critical thinking skills students need in the 21st century learning. Supporting this, Joyce et al., (2009) found out in his research that applying problem-based learning increase students' participation in classroom activities and enhance critical thinking skills. Those writers believe that problem-based learning strategy support students' capacities in, social interaction, self-directed learning, cooperation and critical thinking skills. Moreover, Alismail & McGuire (2015) assert that problem-solving skills allow students to learn and achieve the other 21st century skills.

Communication Skills

Communication is an integral part of the skills workers need to be successful in the world of work. Supporting this, Suarta et al. (2017) suggested that in order to be able to communicate effectively, a job seeker or employee must possess in all domains of communication skills. For Voogt and Roblin (2010), communication skills refer to effective and efficient transfer and receive of a message. Ravitz et al. (2012) defined communication skills as individual's ability to organize their thoughts, data, and findings so they can share them effectively through the use of a variety of media, as well as orally and in writing. Communication includes the ability to express thoughts clearly and persuasively both orally and in writing, articulate opinions, communicate coherent instructions and motivate others through speech. However, Fullan (2013) argued that in a 21st century context, communication refers not only to the ability to communicate effectively, orally, in writing, and with a variety of digital tools but also to listening skills. In the same manner, Brewer (2013) belives that communication skills include the ability to listen and observe to gain understanding, clearly and effectively share ideas, use strategies and skills to work effectively with others, and analyze and evaluate the effectiveness of formal and informal communications.

Communication happens every day in the workplace, such as managers give direction to workers, coworkers communicate to plan and demonstrate tasks and employees communicate

information to customers (Suarta et al., 2017). The ability to communicate is one of the employability skills and attributes necessary for a graduate's success in entering the worldof work. According to Voogt and Roblin (2010), communication requires a goal-oriented exchange of information (speaking, listening, recognizing the core of a message, effectively expressing, etc.), handling various communication situations (interviews, presentations, debates, knowing rules and social conventions, etc.), handling different media (texts, images, video, etc.) and using different strategies to use the opportunities that are offered by ICT to communicate effectively. Communication skills include specific types of communication used in the workplace, and include oral, written, non-verbal, and listening skills. The ways that teachers enable students to develop or improve their communication skills include writing assignments and reports as part of the studies, and making oral presentations as part of the classroom instructional activities.

Collaboration and Team work Skills

Teams are composed of individuals who have several different characteristics. Teamwork is synonymous to working collaboratively in groups. Suarta, et al. (2017), define teamwork as the ability to work with others effectively, and believed as an important learning skill and work-readiness skill. Moreover, it is taken as a key requirement in most occupations as an essential part of workplace success. Team work requires cooperation and leadership, including organizing groups to accomplish a purpose, helping others to do things their way, ability to choose appropriate leadership style, understanding personal strengths, and teaching others new skills (Brewer, 2013). Teamwork relays upon individuals working together in a cooperative environment to achieve common team goals through sharing knowledge and skills. Hence, it involves building relationships and working with other people using a number of important skills and habits, such as working cooperatively, contributing to groups with ideas, suggestions, a sense of responsibility, respect for different opinions and ability to participate in group decision-making (Suarta, et al., 2017). Successful teamwork relies upon synergy existing between all team members creating an environment where all contribute and participate to promote and nurture a positive and effective team environment (Oudeweetering & Voogt, 2017). Team members must be flexible enough to adapt to cooperative working environments where goals are achieved through collaboration and respect with another team member (Suarta, et al., 2017). Teamwork is all about being able to operate smoothly and efficiently within a group. Brewer (2013) team work demands a number of other skills including communication; other interpersonal skills such as negotiation, influence, advising

and interpreting; the ability to encourage and inspire other team members; and the ability to compromise and ignore one's own ego.

Collaboration refers to the ability to work together to solve problems, to answer questions, to work effectively and respectfully in teams, to accomplish a common goal, and to assume shared responsibility for completing a task (Ravitz et al., 2012). Enyedy and Stevens (2014) also describe collaboration as a learning skill, an interpersonal skill, a way of working, and a way to learn about how individuals think. For Oudeweetering and Voogt (2017), collaboration is the ability to achieve a goal as a team, as well as the ability to complement and support each other. Creating cooperation among team members demands related work skills. For instance, Fullan and Scott (2014) believes that the capacity to work interdependently and synergistically in teams with strong interpersonal and team-related skills demand effective management of team dynamics, making substantive decisions together, and learning from and contributing to the learning of others. Collaboration is about jointly realizing a goal with others through supporting and complementing the others. Social interdependence, task-related processes and interpersonal skills are the primary focuses of collaboration. Collaboaration requires the ability to communicate effectively, the ability to recognize different roles for the group memebers, the ability to ask, give and receive help from others, a positive and open attitude towards others ideas and respect for differences, the ability to negotiate and to make agreements with others, and the ability to function in heterogeneous groups (Voogt & Roblin, 2010). Working together in the classroom will give students opportunities to enhance their ability to cross boundaries, learn from others and increase their openness to the views and needs of others. Collaboration is therefore all about developing ability to work with others.

Through collaboration students learn the fundamental skills of productive communication, respect for others and teamwork while generating ideas together (Bell, 2010 as cited in Alismail & McGuire, 2015). The ability to work together and collaborate with one another to accomplish a goal not only enhances the learner's ability to socially connect with others, but also learn the importance of teamwork and shared responsibilities. Naturally, the most effective way to do this is holding group activities. Pair work, group work and collaborative projects help students to work and collaborate with different types of people. Assigning different roles to students when working in groups also gives everyone gets a chance to be a leader and work effectively with people from different backgrounds. Trilling and Fadel (2009) expalined that students who know how to collaborate should be able to work

effectively and respectfully with diverse groups, be flexible and willing to make compromises and understand the value of each member's contributions to the group's work. One of the most appropriate methods to develop collaboration skills is group work (Stramkale, 2018). Intensive interaction and communication as well as the ability to organize work, and to take responsibility for the duties to be carried out, are the important element of group work.

Creativity and Innovation Skills

The revised version Bloom's Taxonomy shows that creativity is among the highest form of cognitive skill. It is related to creating new ideas, analyze these ideas, and elaborate and expand them. It requires an inquisitive and entrepreneurial attitude, the ability to think outside the box and to see new relations, to know about creative techniques (brainstorming, etc.), and the ability to dare taking risks, make errors, and see this as a learning opportunity (Voogt & Roblin, 2010). Vasanthakumari (2019) described creativity as the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, and entertaining ourselves and others. Creativity and innovation is about finding new and alternative ways to solving problems. Supporting this idea, Ravitz et al. (2012) stated creativity and innovation skills as it enables students to generate and refine solutions to complex problems or tasks based on synthesis and/or analysis and then combining or presenting what they have learned in a new or original way.

Creativity encourages students to use their imagination so they can express themselves in different ways and create new things. Furthermore, it allows students to be able to analyze and evaluate information and create something new from what was learned is the goal of learning. According to Trilling and Fadel (2009), a creative student is able to use a variety of creation techniques, such as brainstorming, can create novel and worthwhile ideas and is able to elaborate and refine their own ideas to maximize their work. Creative students are also able to work with others effectively and be open to new and different perspectives. Teaching learners how to develop creative abilities using instructional strategies that help learners develop creativity is the responsibility of the 21st century teacher.

Decision making Skills

Making a decision is a choice between multiple options and is considered as part of cognitive process. According to Kar (2011), decision-making skills refers to the choice of the most appropriate solution among the possible alternatives and the ability to solve problems, getting correct information, and making the right choice. It is a cognitive process resulting in the

selection of a belief or a course of action among several alternative possibilities (Vasanthakumari, 2019). Suarta et al. (2017) assert that good decision-making requires a mixture of skills: creative development and identification of options, clarity of judgment, firmness of decision, and effective implementation. The same authors believe that the steps in problem-solving is quite similar to decision-making and both processes have been characterized as complex processes in which an individual identifies and evaluates several alternative courses of action and selects an alternative for the purpose of implementation.

Decision making is often an integral part of a leader's role in the workplace. Decision making refers to the process in which workers decide to take action in order to maximize the achievement of a desirable outcome. Decision making as a psychological construct is underpinned by both cognitive and behavioural traits (Aarskog, Barker, & Borgen, 2019). The ability to understand and interpret preliminary information is essential to effective decision making. Employees those lacking decision making ability are likely to have difficulty interpreting the information presented to them. This impies that decision-making is not possible without well-developed critical thinking skills.

Intrapersonal Skills

Intrapersonal domain of competencies, like Bloom's affective domain, involves emotions and feelings and includes self-regulation, the ability to manage one's emotions and set and achieve one's goals (Tenedero, 2001 as cited in Angeles, 2012). Intrapersonal skills primarily involve traits or states of individuals that help form his or her personality. People with high intrapersonal skills tend to know themselves well, feel positive about what they are doing in their lives and express their feelings confidently without being aggressive toward other people (Angeles, 2012). Intrapersonal domain of competencies includes intellectual openness, work ethic, and positive self-evaluation. According to Hilton (2015) intrapersonal skills includes self-discipline, self-management, ability to learn independently, work ethics, flexibility and adaptability, self-awareness, perseverance, self-motivation, compassion, integrity and self-respect.

Self-management is an individual's ability to assess self accuracy, set personal goals, monitor progress, and exhibit self-control (Bates & Phelan, 2002 cited in Williams, 2015). It requires the ability to set realistic goals and priorities, to carry out goal-oriented activities (concentration, self-motivation to perform a task, self organization, self-regulation, self-direction, self-reflection, independence) and monitor the process of these activities (planning,

time management), the ability to reflect on the actions and the performance of the task, the ability to provide feedback on your own behavior and use this feedback to make adequate follow-up choices, and to be aware of the development of own competence (Fisser & Thijs, 2015). As a system, self-management consists of self-motivation, taking responsibility, task setting/prioritizing, and time-management. Self-evaluation skills, self esteem, self-awareness, and the ability to set goals are also part of the more general category of self-management skills. For Vasanthakumari (2019), time management is the process of organizing and planning how to divide your time between specific activities.

Self discipline is an essential skill for successful collaboration, particularly in groups. Students with high self-discipline are able to control impulse-driven answers and focus on task (Hamilton, 2018). Self-discipline is perceived as socially and morally responsible behavior motivated mainly by internal factors, not just external positive inducements or fear of punishment (Brundrett & Lungka, 2019). Self-discipline is one of the most desirable qualities that pupils can develop regardless of their age as it positively affects the level of learning and personal growth. Pupils with well-developed self discipline are characterized by reliability, hard-working, and the ability to complete the task. Low self-discipline not only limits the individual, but also creates complex behavioral problems for surrounding pupils.

2.6.2 Curriculum for the World of Work

There is a growing emphasis worldwide on the need to equip learners with a set of key competences or skills that are necessary to succeed in education and employment (Amadio, 2013). Preparing students for work and equipping them with appropriate knowledge and skills is among the responsibilities of policy makers, curriculum experts and schools. Schools are also expected to prepare students with the necessary knowledge and skills that will help them be successful in their future careers. Secondary education prepares students for work when the education system provides the school relevant curriculum and, in turn the schools deliver the contents via high quality instruction so that students acquired competencies the world of work demand from secondary school graduates. The world of work demands not only academic knowledge and technical skills, but also core work skills that will enable graduates to perform the tasks efficiently and effectively (Alismail & McGuire, 2015). The work skills are the combination of the competencies and skills that are necessary for individuals to be successful in daily life and at workplace. Paige (2009) recommended that a 21st century curriculum should blend knowledge, thinking, skills, media, Technology, and real life experience in the context of core academic.

Transversal skills, soft skills, critical skills and 21st century skills are synonymous terminologies that are frequently used to represent the core work skills employers require from secondary school graduate (Chalkiadaki, 2018; Scott, 2015; Voogt and Roblin, 2012). Transversal skills are also categorized in to cognitive and non cognitive (Thompson, 2007 cited in Wood, 2012). Cognitive skills such as critical thinking, problem solving, collaboration, effective communication, motivation, and learning to learn that can be demonstrated within core academic content areas are important to success in education, work, and other areas of adult responsibility. Non cognitive skills refer to a broad set of skills, competencies, behaviors, attitudes, and personal qualities that enable people to effectively navigate their environment, work well with others, perform well, and achieve their goals. These skills are typically considered as not specifically related to a particular job, task, academic discipline or area of knowledge and that can be used in a wide variety of situations and work settings (Wood, 2012). However, one among the problems of secondary education systems in most African countries including Ethiopia place a strong emphasis on knowledge and competencies for higher education, even though most school-leavers do not enter tertiary education. If the concern is to prepare students for the world of work and help employees effectively perform in the workplace and in using the technical skills equally needed in the market to execute a job, curriculum experts and teachers are required to integrate transversal skills in academic general secondary school curriculum and instruction.

Benjamin Bloom identified three domains of learning that are equally important for holistic development of students (Winterton et al., 2006). The cognitive domain involves knowledge and the development of intellectual skills. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. Affective domain involves our emotions in the form of feelings, values, appreciation, enthusiasm, motivations and attitudes. The Psychomotor domain includes the development of practice skills through coordination and use of the motor-skill areas. The cognitive, affective and psychomotor domains are subdivided, starting from the simplest behavior to the most complex. The cognitive domain is categorized in to lowe-level thinking and upper-level thinking (analysis, synthesis and evaluation). Higher order thinking skills include problem solving, critical thinking, creative thinking, inquiry, and decision making (Lippman et al., 2015). These skills reflect the ability to take in information from multiple sources, identify the issues, evaluate potential options, and reach an appropriate conclusion. Bainton, Barrett and Tikly (2016) assert that the higher order cognitive and affective skills

help students to get prepared for workplace and easily achieve the expected outcomes of the next level of education. If the intention of secondary education is to prepare students for work, secondary school curriculum must provide students the three domains that are decisive to prepare students for the world of work.

The core work skills are the key for students to live and work in diverse environments (Ball, Joyce & Butcher, 2016). The work skills Majid, et al. (2012) identified as employers expect from the workforce are foundational/basic skills, social skills, higher-order thinking skills (problem solving, critical thinking, and decision-making), intrapersonal skills, and positive self-concept. Foundational basic skills which include the literacy and numeracy skills are among the skills the labour market requires from their employees (Brewer, 2013). These skills are also a prerequisite for continuing in education and training, and for acquiring transferable and technical and vocational skills that enhance the prospect of getting good jobs performance of employees in the workplace. Social skills includes respecting others, using context-appropriate behavior, and resolving conflict. Employers want employees who can communicate effectively, think creatively, solve problems independently, manage themselves at work, interact with co-workers, work in teams or groups, handle basic technology, lead effectively as well as follow supervision (Brewer, 2013). In the same vein, Chalkiadaki (2018) grouped 21st century skills that are essential in the workplace to personal skills (self-development and autonomy, creativity, problem-solving and critical thinking), social skills (communication and collaboration, cultural awareness and global awareness, leadership), information and knowledge (learning, information management), and digital literacy. Though different terminologies and categorization are used to describe the work skills, to fill the skill gap and to make a curriculum relevant, identifying the skills demand of the world of work and incorporating them in secondary school curriculum is the key role of curriculum makers.

The teaching methods prescribed in education policy to guide the presentation and organization of curriculum contents should be the one which encourages students equipped with the core competencies and skills help them prepared for the future life and work. Brewer (2013) suggested that, it is crucial to employ learning practices that can equip students with the core work skills which emphasis more on learning by doing and working in teams and thinking creatively and to use authentic assessment methods. To help students gain the competencies and develop the skills that will enable them develop the capability to work, students must be given the opportunity to participate in learning activities. As indicated in

various documents (Colby, 2000; MoE, 2009), constructivist theory, competency-based curriculum and student-centered approach are the highly recommended theories to develop curriculum that encourage learners develop key competences required in the world of work.

2.7 Relevance of Ethiopian Secondary Education: Historical Overview

The history of relevance of education in Africa is not meaningful without indigenous education. Indigenous education (as part of traditional education), which was operating in the continent before the arrival of western education, has been contributing in the preparation of people for life and work. Supporting this, Ngoni and Oswell (2017) noted that, African traditional education places great emphasis on character formation and the acquisition of attitudes and values which make the learner a complete man. Joshi and Verspoor (2013) also stated that the main aim of traditional education was to transfer knowledge between people during their daily activities, equip people with value and attitudes, stimulate intellectual growth, and develop constructive thinking, conceptualization and creativity. The authors extended that the role of traditional education was to enable people to deal with the natural environment; to cooperate with individuals and secure tribal membership (group dynamics); to ensure tribal discipline; to maintain cultural aspects; to learn technical skills for construction and production; to maintain tribal law and order; and to practice religion. Indigenous African education was collective, progressive in conformity with the physical, emotional and mental development of the people and embodies lessons on mutual respect for the opinions of others, deference to elders, conflict negotiation and forgiveness (Mosweunyane, 2013). It was used to build 'acceptable' human character, physical and mental development among people that are relevant to prepare individuals for work and life. However, such education did not have a specific time span as people gained knowledge throughout their whole life.

Origin of education in Africa was not resulted from colonial innovation. Before the arrival of the imported western education, indigenous education was served as a tool to prepare young people for different vocations. Solomon (2020) mentioned, in Ethiopia, indigenous education is credited for training state functionaries, minting coins, carving obelisks, inventing writing systems, music, philosophy, art, aesthetics, healing, micro-financing, soil and water conservation, food processing, terracing and pastoral traditions associated with egalitarian socio-political orders, devising technologies and passing down the techniques of iron-smelting, tanning, weaving and pottery. Moreover, in Ethiopia, indigenous education has

been serving as an important transmitter of cultural identity of all ethnic and linguistic groups from one generation to the next and prepares them for life.

Church and Islam (Quaranic) education are among the popular religious education in the history of traditional education of Ethiopia that has been preparing teenagers for different purposes and positions. Although it is difficult to indicate when indigenous education started in Ethiopia and in most Africa countries, church education started in Ethiopia following the introduction of Christianity during the 4th century (Sisay, 2016). The Orthodox Church education, primarily, aimed at preparing young men to provide church services, such as deacons and priests. The other major role of church education was teaching the young and training leaders for religious organizations and government institutions and served as the main source of judges, governors, scribes, treasures and general administrators for the, then, government and society (Messay, 2006). The techniques and the contents of the education were not apt to develop the understanding or to cultivate the intellectual faculties of creativity, criticism, imagination, critical thinking and farsightedness (Solomon, 2020). In addition, the church education and schools did not serve the whole nation equally; provided service only for those who followed the Christianity faith. Even though church education had four distinct and successive stages which seem similar with the structure of modern secular schools, Wuhibegezer and Gezae (2015) argued that, most of the studies conducted on traditional education in Ethiopia criticized the church education curriculum, the contents and the philosophical orientation as it was Ethio-centric (centralized), not ethno- centric (diversity was not recognized).

Islamic education is introduced to Ethiopia during the 5th century (Solomon, 2020). The three principal aims of traditional Islamic education are teaching and dissemination of Islamic dogma and practice, the training of the clerical class, and the spread of literacy (ibid). Solomon (2019) argued that, similar to the Christian Orthodox education, the Muslim education was concentrating more on rote learning and memorization that don't encourage students' problem solving and critical and creative thinking abilities. The curricula were mostly religion oriented.

Modern education was introduced to Africa in the end of the 19th and early 20th centuries by European missionaries. Few argue that the introduction of modern education in Ethiopia coincided with the arrival of Portuguese missionaries (Catholic Jesuits) starting from the 16th century. On the other hand, researchers found out that the modern education in Ethiopia began toward the end of the nineteenth century and others

believe that it was during the 20th century when western countries began to influence education system of the country. According to Solomon and Aschale (2019), the Ethiopian modern education system and its curricular components before 1991 was influenced by foreign countries and categorized to five periods: French (1908-1935), Italian (1936-1941), British (1941-1952), American (1952-1974), and socialist countries (1974-1991). This confirms that the problem of relevance was started in Ethiopia since the inception of modern education. The ministry of education document (TGE, 1994) also realized that education systems in the past regimes (pre-1991) were associated with problems of access, relevance and efficiency.

During the French period (1908-1935), the Ethiopian education system and its curricular components including objectives of education, contents or courses to be taught, organization of a school and its management, and the method of evaluation were primarily influenced by French education system. The aim of the French-oriented education was to master different languages such as French, Italian, English, Arabic, and Amharic (Melese, 2015). The intention was to produce translators, interpreters, ambassadors, emissaries to foreign countries with which Ethiopia had established contacts (Solomon, 2020). That is why the then schools of Ethiopia were blamed as mere language schools by writers and commentators of the education field in Ethiopia. Though, producing trained manpower for the government offices and enterprises was among the purpose of education, the selection and organization of content were determined by the headmasters and teachers from France and French was used in Ethiopia as medium of instruction up to 1935 (Alemayehu & Lasser, 2012). As a result, the curriculum was criticized for the lack of relevance with the local demands and lack of emphasis on vocational education.

During the Italian occupation (1936-1941), the major concern of education was to create citizens that would be loyal to Italy (Alemayehu & Lasser, 2012). The aim of education at this period was geared to producing skilled manual labors, interpreters, militia, people's soldiers and native propagandists (Solomon, 2020). The content of education focused on reading, writing and simple arithmetic, semi-vocational skill training and internalizing fascist values to promote loyalty to the regime. Unlike French domination period, during Italian age there was neither uniform and standardized curriculum nor a standardized assessment method in the schools (Solomon & Aschale, 2019). The Italians were interested to build up the youth with education centered on their political ideology. For the natives education was restricted to elementary schools. Even though, mother tongue languages (Amharic, Afan Oromo, and

Tigrigna) replaced the 'national languages' of Ethiopia, classroom instruction was not based on the pedagogical principles (Adane, 1993 cited in Alemayehu & Lasser, 2012). The curriculum and pedagogical practices were not to satisfy the need, interest and demands of Ethiopia; it was to serve the interest of those who used education as a tool for colonization.

The British oriented education was aimed to produce manpower for the government offices. From 1941 to 1952 British government was interested to assist and influence the structure of education, medium of instruction, evaluation system, and the curriculum development and implementation practice of the Ethiopian education system by assigning advisors as strategy to implement their hidden agenda (Zewdie, 2000). Consequently, the education system of the country did not reflect the cultural, social and economic situation of the country. The fundamental principle that dictated the development and implementation of school curriculum in Ethiopia was the political agenda of the aristocracy and the foreign advisors (Tekeste, 2019). Since the curriculum development process was dominated by advisors imported from British, Ethiopian education system didn't respond to the needs and problems of the society. One of the major achievements of the time was academic secondary schools and technical and vocational schools were opened (Alemayehu & Lasser, 2012). The schools were opened to train technicians for service sectors like transport and commerce, and officers for police and the armed forces. However, the Ethiopian education during British dominance was believed as it was irrelevant because the curriculum, the structure, and textbooks used were copy of British East Africa curriculum. Moreover, students were prepared for the London certificate examination.

During the British period, the duration allocated to complete secondary education was 4 to 6 years. Initially the structure of the education system was designed to be 4-4-4 system (four years of primary, intermediate, and secondary education) (Alemayehu & Lasser, 2012). In 1947, the first 10 Year Education Plan was drafted, and a 6-2-4 system (six years of primary school, two years of junior secondary education, and four years of senior secondary education) was introduced. By 1948, a slight modification was introduced and it became 8-4 (Solomon, 2020). English became the medium of instruction for both primary and secondary schools. Like the earlier periods, the curriculum of the time was not based on the economic, social and cultural realities of Ethiopia; rather, its components were copied from other countries. The secondary school syllabus was based on the London School Leaving

Certificate Examination. During the period of British domination, due to the fact that the Ethiopian education system was highly influenced by the British advisors, there was nothing about the Ethiopian in the classroom, except the children (Zewdie, 2000).). Consequently, it was difficult for the education system to respond to the needs and problems of the society and reflect the cultural, social and economic situation of the country.

From 1950s onwards, there was a gradual reduction of British influence as Americans began working in the Ministry of Education and experimental curriculum became operational up to the end of the imperial period (Tekeste, 2019). As Americans started to put their influence on Ethiopia's educational system, they begin to assume headmasterships and teaching positions in schools and started to participate in the process of policy making through the Education Advisory Group (Alemayehu & Lasser, 2012). The educational aim at this period was the production of semi-skilled and skilled manpower for the different areas of life tasks. To realize the aim, one of the startegies the American advisors to Ethiopian education employed was to change the education structure to 6+2+4. Although, the curriculum was revised to de-emphasize the academic subjects by enhancing vocational and technical education (Solomon, 2020), the education system was not emerged from the assessment made to satisfy the needs of the local (Ethiopian) people.

The socialist-oriented (during Derge regime) education which was begun in 1974 was the influence of the socialist countries. The curriculum during the period was centralized. All curricular materials used in all primary and secondary schools of the country were developed in the Curriculum Department of the Ministry of Education **(**Alemayehu & Lasser, 2012**).** The ultimate objective of the curriculum was to produce citizens who possess solid fundamental knowledge of all areas of social life, socialist attitudes and convictions and are fully prepared for the building of socialism (Ibid). Creative, scientific and technical abilities and skills were suggested to be embedded in the education to realize the role to construct a socialist society. The education during the imperial period was entwined with problems of relevance, quality, access, and equity (TGE, 1994). The education systems and their respective curricula were designed not based on the economic, social, and cultural realities of the country,; it was to serve the political ideology of the time. As discussed earlier, the curriculum was adopted from the experiences of countries having closer perspective to the military governments of the time. Similarly, the education system was divorced from practice, the contents were largely restricted to abstract book learning, and the curriculum

was less capable of solving the problems of the country (MoE, 2002). During that period, quality of education deteriorated in both quality of teachers and the quality of the curriculum.

In concussion, indigenous education was the main tools used to sustain generation with native knowledge, skills and values. However, the extent to which they have been integrated with modern educational philosophy and curriculum of the modern education to keep the identity and the diverse need of the local society is not clear, yet. The western type of education system which was commenced at the beginning of the twentieth century with the intention to modernize countries in Africa including Ethiopia have been injecting the western philosophy of education and curriculum in African education system by ignoring Africanized and indigenous knowledge and education philosophy that make African self-reliant (Wuhibegezer & Gezae, 2015). Consequently, in Africa, education systems, curriculum and pedagogical practices were served as the indirect colonial tools of the western countries. This was observed in the curricula content and teaching methods that are detached from the local context. The TGE (1994) document also confirmed that the pre-1991 education system of modern education was copied from different foreign countries. That is, education before 1991 was irrelevant to the context of the country.

In response to the pre-1991 education problems, the Ethiopian government had declared the new Education and Training Policy to replace the unrelated and copied educational systems and curriculum that didn't address the need and problems of the society (MOE, 2002). In addition, to identify the shortcomings of the past education system's weaknesses, the 1994 Education and Training Policy gave attention to equity and access of education, restructuring the education system, changing the curriculum to increase relevance of education to the society's problems, making teachers' training relevant, and improving education management so as to improve the quality of education (TGE, 1994). The new education policy was designed to develop the physical and mental potential and capacity of the individual and to cultivate the cognitive, creative, productive and appreciative potential of citizens by appropriately relating education to environmental and social needs. In order to effectively implement the policy, Ministry of Education continued to develop different strategies and programs. Though, access of education is improved through the implementation of the policy, quality and relevance of education was not improved the expected level (MOE, 2005). Research findings realized that lack of relevance was among the bottleneck problems observed in the education system (Amare et al., 2016; Joshi & Verspoor, 2013; Solomon & Aschale, 2019). Consequently, the issue of

improving relevance of education has been continued to become the major concern of Ministry of Education and researchers.

2.8 Curriculum Development Process and the Ethiopian Practice

The term 'curriculum' has got many definitions from different scholars. Traditionally, curriculum was conceived as the totality of knowledge and topics to be taught in schools; it is everything learners experience under the guidance of the teacher. Tanner and Tanner (2007) considered curriculum as the knowledge students get from the textbooks, the nature of learning, how teachers are going to engage the students in learning, how teachers are going to teach, which strategies will be employed and what kind of activities will be designed to assist students to internalize the knowledge. Ornstein and Hunkins (2009) also explained the concept of curriculum using the following questions: What should be done? What subject matter should be included? What instructional strategies, resources, and activities should be employed? What methods and instruments should be used to appraise the results of the curriculum? The concept of curriculum stated by Ornstein and Hunkins gives due emphasis to fundamental elements of curriculm including the purpose of education, curriculum content and its organization, the teaching methods, educational materials, learning activities (experiences) and assessment techniques.

Curriculum development is the process through which the basic elements of curriculum such as objectives, content, learning experiences, and evaluation, and sequencing, organizing and aligning these elements (Jacobs et al., 2011). Philosophical, psychological, sociological and historical foundations of a curriculum play a pivotal role in determination of the nature and organization of a curriculum (Ornstein & Hunkins, 2009). Cai and Howson (2013) defined curriculum development as a process of developing a coherent sequence of learning situations, materials, and student assessment procedures, which has the potential to bring about desired changes in students' learning. The curriculum development process includes the process of planning, implementing, and evaluating curriculum. Though there are different mdels of curriculum development (objective, process and situational analysis) (Ornstein and Hunkins, 2009), in many countries including Ethiopia, formal curriculum development process starts from reviewing the curriculum. Following the reviewing phase, designing an improved curriculum, implementing a new curriculum and critically evaluating the revised curriculum should be done one after the other. This implies that there are serious of steps, connected to one another, to be followed during curriculum development. In this process, the role of curriculum developers is making decisions about the goals of the curriculum, what

content to include, how it should be organized, how it should be taught and how to determine effectiveness of the curriculum. In Ethiopia (TGE, 1994), preparation of curriculum is based on the stated objectives of education, ensuring that the re1evant standard and the expected profile of students are achieved.

The curriculum development process involves multistage processes of interrelated tasks including determination of the objectives, curriculum contents, preparation of the curriculum material and implementation of the curriculum (Jacobs et al., 2011; Stenhouse, 2012; Tyler, 2013). That is, the curriculum development process starts when policy makers begin to identify aims of education. Curriculum subject experts are expected to translate the aims while they are developing structure of curriculum framework. Subjects to be learned, learning areas, goals of education, teaching methods, and assessment techniques are among the major elements of curriculum framework that are prescribed to be learned, achieved and used or implemented by textbook writers, classroom teachers and students. In Ethiopia, as indicted in Ministry of Education document (TGE, 1994), preparation of secondary curriculum and textbooks should be at central level, and are based on sound pedagogical and psychological principles and are up to international standard by giving due attention to concrete local conditions and gender issues. The process would be meaningful and effective when all the issues presented at the different levels of the system are relevant and aligned to equip students with the capabilities the world of work demands from the employees.

The process of curriculum making needs involvement of different groups of experts at different levels of systems and sub-systems. McNeil (2009) recommend participatory curriculum development approach for the curriculum development and the implementation of process. This shows that the curriculum development process requires participation of policy makers, curriculum specialists, teachers, students, and other stake holders particularly at the stage of decision making either to revise, improve, or change the existing curriculum or to develop a new one. In the same vein, Alsubaie (2016) believes that involvement of all stakeholders, especially teachers who are directly involved in student instruction are a vital to develop a curriculum which is relevant to achieve the intended purpose of education. MoE (TGE, 1994) also suggested that creating mechanism by which teachers, professionals from major organizations, and beneficiaries should participate in preparation, implementation and evaluation of the curriculum.

The most important person in the curriculum development and implementation process is the teacher. Classrooms teachers are not only responsible for carrying out the curriculum in

classroom. Teachers can contribute by collaboratively and effectively working with curriculum development teams and subject specialists to arrange and compose textbooks and content. Teacher involvement in the process of curriculum development is vital to align curriculum content with students needs in the classroom. Moreover, the teacher's involvement is an important factor in the success of curriculum development including the steps of implication and evaluation. As a curriculum maker, a classroom teacher interprets and transforms the new curriculum using his or her personal practical knowledge (Clandinin & Connelly, 2009). They are supposed to interpret and transform the new curriculum into activities in which students actively participate in questioning, exploring, and constructing knowledge. Teachers are supposed to engage students in cooperative, experiential, meaningful and reflective learning, enabling them to have dialogues with the objective world, with other people, and helping them develop competencies, positive values and attitudes so that they acquired the intended knowledge, skills and attitudes.

Approaches to Curriculum Development

Relevance of education is mainly determined by the essence of its curriculum and the process of its implementation. Ornstein and Hunkins (2009) believe that a curriculum's parts should promote the whole. That is, the shape of a curriculum plan and the arrangement of its parts, addresses the essence of curriculum design. Therefore, in designing a curriculum, we should consider philosophical issues of education and learning theories that are central to determine if our decisions are congruent with our basic beliefs concerning people, what and how they should learn, and how they should use their acquired knowledge. Therefore, in the process of curriculum making, we must consider how its parts interrelate so that the intended goal of secondary education is attained. According Nix, Fraser, and Ledbetter (2005) national goals for education, and outcomes statements that translate those goals into measurable objectives should provide the starting point for the development and implementation of curriculum. Maintaining alignment between the elements of curriculum maximizes the conditions for quality learning by ensuring coherence throughout the process from the identification of learning outcomes to the choice of teaching methods and assessment. In other words, the teaching-learning methods and assessment techniques should be aligned with the learning activities and objectives so that all aspects of the system are in accord with supporting appropriate students learning.

Though research findings confirmed that the reality is different, in Ethiopia, competency-based curriculum which is apposite to achieve the predetermined aim of education and

constructivist and learner centered teaching method that are important to encourage students self learning are prescribed to develop secondary school curriculum (MOE, 2009). That is, the approach prescribed to design and prepare curriculum is competency-based curriculum development approach. In competency based curriculum approach the outcome usually defined in terms of generic or cross-cutting competences that students should have acquired by the end of their general education in order to succeed in their further studies, for their personal development and for employment and inclusion in a knowledge society (Tedesco, Opertti, & Amadio, 2013). The outcomes are the abilities or skills that students are expected to achieve by the end of school year for a specific subject. As indicated in the same document, competency is taken as the capacity of learners' to apply knowledge, skills, attitudes and values in independent, practical and meaningful ways. Harris (2017) also defined competency as the capability to use or apply the set of related knowledge, skills, and abilities required to successfully perform tasks in a workplace. Johnstone & Soares (2014) also noted that the development of competencies should be aligned with industry and academic expectations. This implies that competencey is different from simply knowing of contents included in the traditional curriculum. If the intent is to prepare students for work, therefore, schools should provide a curriculum which contains competencies that actually needed in the world of work. Competency-based curriculum emphasizes the importance of competencies reflecting the knowledge, skills and attitudes that enable students to perform the tasks expected from them. According to Gervais (2016), competency-based curriculum focuses on mastery of the knowledge, attitudes, and skills. Though the model seems outcomes based, it includes an emphasis on a strong pedagogy, the use of interdisciplinary resources, and assessment of a student attainment of competencies across the curriculum.

Models of Curriculum Development and the Ethiopian Practice

Curriculum is the most central aspect of an educational system, and it comprises the opportunities for learning provided by a school. It includes both the classroom and out-of class room activities. Ornstein and Hunkins (2009) contend that curriculum development encompasses how a curriculum is planned, implemented and evaluated, as well as what people, processes and procedures are involved. Curriculum development is also a multi-staged activity that involves policy makers, planners, textbook writers and school teachers, other practitioners who participate in planning, implementing and evaluating the curriculum at different levels (McNeil, 2009). Furthermore, to develop a curriculum that can represent the views and interests of diverse groups, representatives of the community including

teachers, parents, students, trainers, researchers, principals, public and private sector corporations and businesses, and politicians should involve in the development process. Stakeholders' involvement in curriculum development process is also important when the intention of education is seen as a means for human resource development tool for countries (Ornstein and Hunkins, 2009). Consequently, Mitchell (2016) suggested that education need to be considered as a means for human resource development tool for countries, and hence, curriculum should be designed to meet economic needs and goals. Wiseman, Alromi & Alshumrani (2014) argue that in today's globalization the efforts to construction of curriculum should be to meet the time economic needs and goals. Therefore, if the intent is to develop effective curriculum that can serve the needs of individual learner, technology, economy, employers, the subject matter and the society, all groups of stakeholders should participate in curriculum making process.

The curriculum development model experts prefer to use should help them to prepare curriculum which is responsive to the need and interest of students and the demand of the world of work and the society at large. Theoretically, curriculum development process has to begin from researching situations. It should also be participatory, and based on the philosophical, sociological and psychological foundations and learning theories. Ornstein and Hunkins (2009) assert that appropriate model or approach to curriculum design and development takes into consideration the curriculum foundation, i.e., it clarifies about balances between knowledge, skills, and attitudes development, individual and social needs, learning theories, relevant contents, and effective strategies of instruction and evaluation. If the desired is to improve relevance of education and select and organize the contents of curriculum and instructional strategies that are relevant to the needs of the learners, the demand of the society and requirements of the world of work, it is must to give due consideration to the curriculum development principles and models we employ during curriculum planning and textbook preparation.

The widely known curriculum development models are objective model (e.g. Tyler's and Taba's Model) (Tyler, 2013) and process model (Stenhouse's model) (Stenhouse, 2012). Since all the models have their own advantages and disadvantages, there is no best model to be used all the time and for all purposes. It depends upon the fitness for the purposes. According to objective model what should comes first is identification of objective, whereas for process model priority is given to determination of contents and principles (Tyler, 2013). Situational analysis model of curriculum development model is the third approach which gives major emphasis to analyzing problems of a society. If Ethiopian context is considered,

the objective model is the most used approach to curriculum development almost at all educational levels up to the present time in Ethiopia (Solomon, 2008). That is, preparation of curriculum was based on the identified objectives, ensuring that the re1evant standard and the expected profile of students are achieved (TGE, 1994). In the same manner, as clearly indicated in the curriculum framework (MoE, 2009), competency-based approach which allows curriculum experts to identify competencies or learning objectives to be achieved at certain grade level was prescribed to develop curriculum. Although, it is not clearly presented in the policy doocuments, the way student textbooks are organization and evidences from curriculum experts show that objective model has been the most dominant approach to develop Ethiopian secondary school curriculum.

2.9 Theoretical Framework

Two theories, system theory and constructivist theory (constructivism), together with competency-based curriculum approach are used to guide the theoretical framework for the current study. A system is a collection of independent but interrelated elements or components organized in a meaningful way to accomplish an intended goal (Meadows, 2008). The function of any system is to process inputs into an outcome for use within or outside of the system (the environment) or both (Fiedman & Allen, 2014). Education as a system has a set of inputs that are subjected to a process in order to attain certain objectives which appear as outputs. Constructivism is a theory which views knowledge as mentally constructed entity via the actions and experiences the learner undergoes with the immediate learning and broader social environments (Strommen, 1992 as cited in Seyyedrezaie and Barani, 2017). The approach encourages student active participation and doing experiments, and promotes the development of self-reflective skills, creativity, analysis, synthesis and problem-solving skills. Terzieva et al. (2015) also noted that active learning approach, authentic activities and interactive learning environments encourage students to learn and develop the key transferable competencies.

System theory

The foundation for system theory emerged with the work of Ludwig von Bertalanffy (Friedman and Allen, 2014). The theory is grounded on the assumption that a system is a whole and composed of interconnected elements that work together to realize goal of the system (Higgs & Smith, 2006). Supporting this, Banathy (2000) characterize system as a whole and has interrelated and interdependent parts, goal oriented, has inputs and outputs to achieve its goals, and gets feedback about the output from the environment. Identifying and

organizing the goals of a system requires a clear specification of objectives of each element in the total system in relation to the goals of the system as a whole. In education, components of the system range from policy formation to classroom practice level. Similarly, Meadows (2008) stated that systems that are concerned within the context of education include the components of the educational process including education policy, curriculum, curriculum materials and equipment, teaching methods, media, school and classroom environment, evaluation procedures, teachers and students. These parts of the system are interconnected and work together to address the needs and problems of a society and to realize the holistic development and plan of learners and the world of work. Therefore, systems theory is instrumental in developing a clearer understanding about parts of a system, the relationships of these parts, the attributes of both the parts and their relationships, the boundaries of the system, and the goals of the system.

Systems theory can be applied to many areas of education, such as instruction, research, management of educational institutions and curriculum development (Senge et al., 2012). In the teaching-learning process, the systems approach takes into consideration all the available learning resources, content, learning experiences and methods to achieve the given set of learning objectives (Fredriksson, 2004). At school level, systems approach helps both the teacher and the students to achieve learning objectives in the most effective way. Also, it is assumed as a tool for solving educational problems and factors that influence achievement of educational goals efficiently and effectively. For instance, Banathy (2000) explains system approach as a strategy to manage and improve the process and products of education. For Higgs and Smith (2006), the function of any system is to convert or process materials, energy, and/or information (inputs) into a product or outcome for use within the system, or outside of the system (the environment) or both. In any system in education context, the outputs are the products of the inputs and process. Processes within a system combine the inputs including environment, equipments, people and methods to produce the output (Samad & Thiyagarajan, 2015). At classroom level, the inputs are basically curriculum contents and other educational resources and facilities that teachers put in while the processes are the methods of delivery of contents. Effectiveness of a system is measured in terms of the ability of the outputs to best functions in the intended tasks (Jidamva, 2012). The way outputs function to meet the requirements of their future career reflects the level of relevance of the inputs and effectiveness of the processes.

Human activity is measured by the quality of its product. The same rule applies to education. In any education system, the outputs could be graduates who are expected to possess relevant and desirable knowledge, skills and attitudes that are acceptable by certain norms and values. In system approach, the teaching and learning process transforms students (internal customers) over a school years into knowledgeable and skilled workforce where the student slowly increase his/her self worth or value they acquired through their education experiences (Tong & Han, 2003). This demand schools to have relevant curriculum. However, its impact will be determined by what happens in schools and classrooms (Verspoor & Bregman, 2008). Jidamva (2012) also argued that relevant curriculum, relevant and adequate teaching and learning materials, attractive learning environment and capable educational leaders are the inputs that are equally important to realize the goals of education. Capable and motivated teachers supported by effective head teachers and administrators and have access to textbooks and other instructional materials are essential to ensure that students acquire the competencies specified in the curriculum. If the target is to prepare students for the labour market, it is not convincing to ignore relevance of curriculum and its implementation, pedagogical practice, and the role of curriculum experts and school level educational experts. In order to improve relevance of curriculum and its implementation, it is must to check the readiness of curriculum experts, textbook writers, and teachers. Furthermore, coherence among the components of the system is very crucial to attain the intended goal.

Education equips individuals with the competencies that help them to be capable workforce so that they will contribute to the achievement of organizational goals. Learning is a tool to supply future workers with skills that will enhance their productivity. Buzzelli (2015) also assumed education as it increases an individual's knowledge and skills needed in the labor market. This view clearly indicted the importance of knowledge, skills and attitudes to become effective and productive worker. Thus, education system should be designed to meet the needs of the labour market and the society, the development of socially approved behavioral patterns and certain institutionalized value system. If the purpose of education is to provide workforce for the labour market, education system as a whole and secondary education in particular should maintain the balance between the knowledge, skills and attitudes students need to be effective in the world of work (Jidamva, 2012). It was argued that education should go beyond an outcome-based understanding of schooling, rather it should focus on the processes whereby students flourish the opportunities that the school offers students to be and to become what they value and to what they aspire (Dagsvik, 2012). Supporting this, Walker

(2010) suggested that in context of education, the process of policy formulation, curriculum making and its implementation should be pursued in conjunction for the benefit of students and society.

Constructivist theory of learning

Constructivism as a theory of knowledge grounded on the assumption that learners construct their own meaning through active engagement and by constructing their own representation of what they know. The constructivist approach views knowledge as an entity, which is mentally constructed via the actions and experiences that the learner undergoes with the immediate learning and broader social environments. Supporting this, Shah (2019) stated that constructivism is a learner centered educational philosophy which is based on the belief that knowledge is not a thing that can be simply given by teacher. Knowledge is not seen as fixed and existing independently outside of the learner; rather it is constructed by the interaction between the learner and external environment through adaptation of and to the experiential world. Seyyedrezaie and Barani (2017) also argue that constructivists assume knowledge and skills as they are not products that can be transferred from teacher to learner; rather, they are the result of learning activities done by learners themselves individually or in groups. Students learn best when they are allowed to construct a personal understanding based on experiencing things and reflecting on those experiences (Peter, Abiodun, & Jonathan, 2010). In line with this, Woo and Reeves (2007) suggested that learners can develop key competences if they learn through authentic activity, rather than solely through instruction. As a result, interactive learning approach and environments that facilitates students' active engagement in learning activities a commonly recommended approach to teach transferable competencies.

Constructivist learning environments is a place where students work together and support each other as they use a variety of tools and information resources in the guided pursuit of learning goals and problem-solving activities (Shah, 2019). Similarly, Seyyedrezaie and Barani (2017) argue that constructivist learning environment is a learner-centered, which is mainly based on problem-solving and hands on activities that require active engagement of cognitive processes. This requires teachers to create conducieve learning environment to maximize the learner's ability to interact with each other through discussion, hands-on activity, and feedback. Interactive learning environments encourage learners to be active and autonomous, require collaboration between learners, developing social and communicative competences, experimentation, exploration and creativity (Elliott, et al., 2000). Moreover, the

constructivist teachers use problem-solving and inquiry-based learning activities with which students formulate and test their ideas, draw conclusions and inferences, and pool and convey their knowledge in a collaborative learning environment (Shah, 2019). Constructivist theory encourages teachers to use a variety of instructional strategies and resources and learners to be active and participate during lesson so as to construct knowledge, skills and attitudes.

Moreover, Terzieva et al. (2015) argue that constructivism is usually encouraging students to use active techniques (experiments, real-world problem solving) to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing. Hence, teachers are expected to facilitate active learning methods by motivating students to construct their own meaning and understanding through creating constructivist classroom. In constructivist classrooms learners are immersed in experiences within which they may engage in meaning-making inquiry, action, imagination, invention, interaction, hypothesizing and personal reflection. Elliott, et al. (2000) stated that a constructivist teacher and classroom differ from a traditional classroom in two major ways: the learning is interactive and student-centered; and the teacher facilitates a process of learning in which students are encouraged to be active, responsible and autonomous. This gives an opportunity for students to develop the skills to work and cooperate with others, critically think, make informed decisions, solve problems and communicate effectively with others.

Competency-based education

Teaching and learning process in any curriculum context requires common goals and supportive and enabling environments to maximize success in students' learning. Competency-based curriculum model is found useful to narrow down the gap between education and work (Curry, 2017). The use of the competence concept has old roots in the theory and practice of curriculum field that can be traced back to the competency movement started in the United States in 1960s & 1970s and spread worldwide, and other attach it with mastery learning models in the U.S. during the 1920s (Kate, 2014). Sullivan and Burce (2014) claim that competency-based curriculum is a solution to the concerns raised about the capability of the secondary school graduates as it emphasizes on the acquisition of knowledge, skills, attitudes and behaviors essential for effective performance of real-world tasks. Similarly, Mosha (2012) notes that a competency-based curriculum seeks to develop in learners the ability to know, to learn and learn how to learn, to do things, and to learn and work with other people. The concept of competency is seen as a set of skills, knowledge and behaviors that an individual needs in order to perform tasks at school and in the world of

work (Sullivan & Burce, 2014). In most of developing countries, the competency-based curriculum was copied from developed countries and adapted to the specific needs of the country. As discussed in MoE document (MoE, 2009), Ethiopia has taken steps to foster the development of more relevant skills and knowledge through competency-based curriculum.

A competency-based curriculum can be pursued through various approaches to curricular design. Whatever the design, however, all curricula need to be focused on the three domains of competencies and all teaching-learning strategies need to be matched to the learning domain (psychomotor, cognitive and affective) (Mosha, 2012). This enables learns develop the ability to know, to learn and learn how to learn; to do things; and the ability to be, to live and work with other people. It has been acknowledged by different scholars that, the competency-based curriculum approach is instrumental in helping students to increase mastery of skills, knowledge and attitudes. In a similar vein of argument, competency-based curriculum in education ought to include more generic competencies (core skills, key competencies, essential skills, foundation skills) (Sullivan & Burce, 2014). The consensus of opinion among educationists show that providing a sound foundation of knowledge in a cluster of essential generic competencies at secondary school is an effective means of shaping an individual's personality. Equal emphasis should be given to teaching and learning activities and assessment that would help students to develop general abilities and competencies that are applicable in different workplaces and in many different aspects of a person's activities.

Unless all the elements of education are strongly aligned and connected as part of a system work for the same purpose, students will finish secondary education without achieving the abilities that allow them to demonstrate the responsibilities they value to perform in the future. Ignoring one of the elements of the system (education policy, curriculum and instruction) that are equally important to equip students with the capabilities required in the world of work and disregarding the issue of relevance will makes the process of preparing students for the work incomplete. Sullivan (2005) suggests that the selection of relevant competencies for the curriculum requires interaction and collaborative work between the subject matter experts/curriculum developers, the learners/students, and members of the community and employers (cited in Mosha, 2012). These allow curriculum developers to make the right choice of the competencies that are needed by the employers and encourage the schools to prepare the students to be successful in life and work after they leave the school. Moreover, students develop the work skills in a learner-centered learning

environment which is mainly based hands on activities that require active engagement, thinking and doing. Therefore, to ensure the production function of education, system theory together with constructivist approach help education policy makers to determine clear and precise objectives and select the curriculum contents and strategies that will be transformed through the productive process into a qualified outputs that can possess the skills, abilities, and knowledge that can be transferred to the target environment effectively.

In conclusion, equipping students with the competencies needed to prepare them for the world of work is the shared concern of the theories focusing on education and the labour market. Unless there is strong alignment among the elements of a system, no parts of the system will achieve the intended goal of education (Higgs & Smith, 2006). However, all the parts or elements have their representative roles which have to be specified in relation to each other and in relation to the purposes to be achieved. Secondary schools prepare students for the world of work (MoE, 2009) when the other parts of the system works toward the anticipated purpose. Secondary schools demand the policy that clearly shows competencies to be attained by the students and curriculum which is relevant to demands of the world of work. Student-centered is among the learning strategies the system requires from schools and teachers to equip students with the competencies the world of work demand from employees graduated from secondary schools. Constructivism is a theory of learning that allows teachers to use various interactive student-centered instructional approaches that enable them to equip students with the skills the world of require from secondary school graduates.

2.10 Conceptual Framework

The conceptual framework is developed after detailed reviews made to understand materials (policy, curriculum and instruction), learning environment (circumstance, belief and practices) and the roles of people (stakeholders) in the process of preparing secondary school students for the world of work. The design of the framework focuses on the key components of the system and the relationship between the parts that shows how they influence students' skills development and the world of work. The key components may include physical and human elements which encompass individuals or group of individuals, documents, texts and proposed tasks or suggested roles and divisions of labour. In education context, elements of the system range from education policy to classroom instructional activities level. Hence, education policy, curriculum, instruction, curriculum experts, teachers and students are the major interrelated and interdependent components that have great contribution in realization of the goal of secondary education: preparing students for work. The strength of the

coherence between the parts and relevance of each element influences the world of work and students' performance in the workplaces.

Besides, the framework shows the relationship between the key components that have irreplaceable role in the process of preparing secondary school students for work. The connection (bond) between the units (or sub-units) in the system and the bond between each unit and the world of work or students' achievement (of the core work skills) is bidirectional.

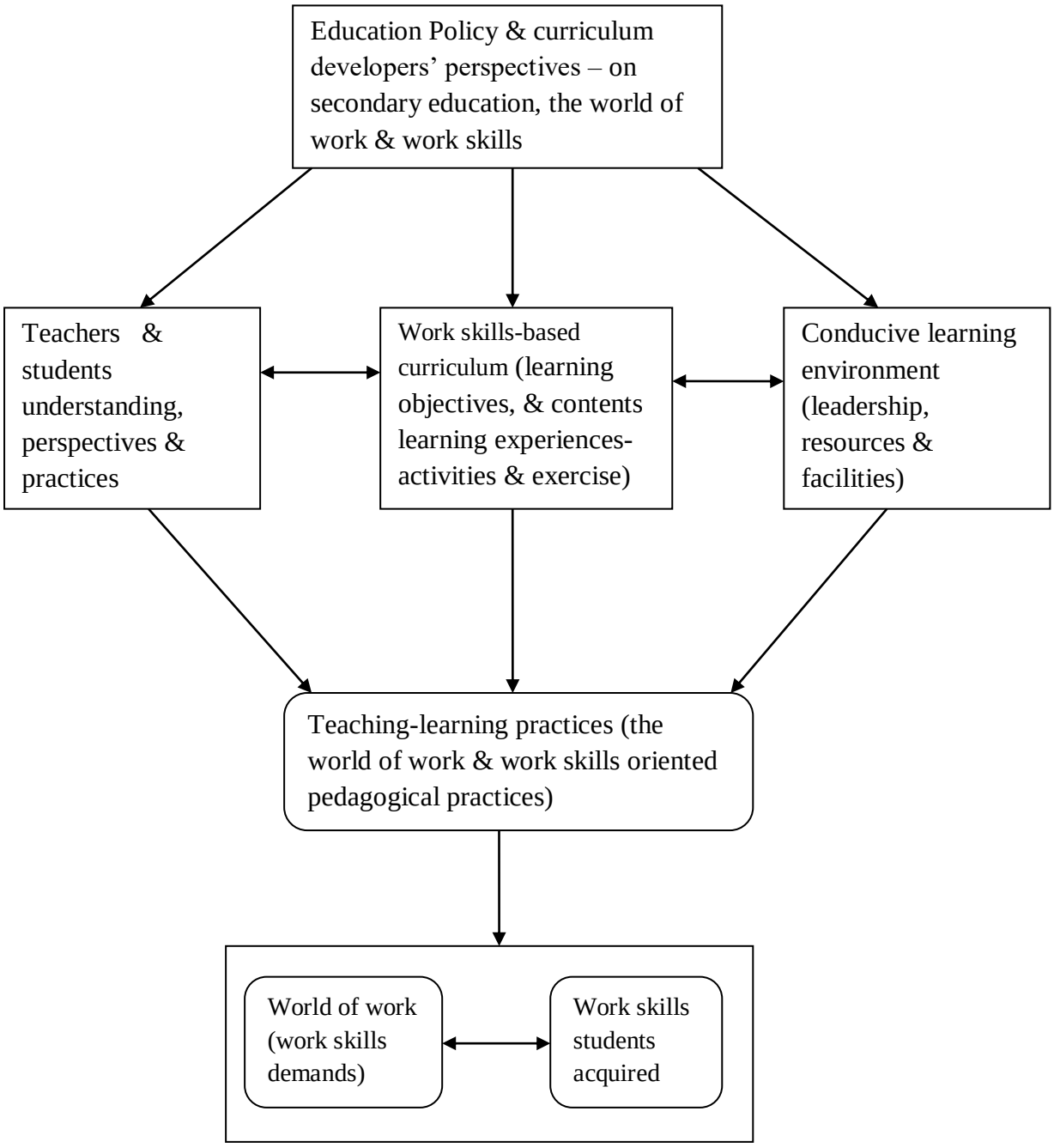

Figure 2: Conceptual Framework

Education system is effective to the extent of the strength of the alignment between education policy, curriculum contents and teaching-learning processes. Supporting this, Case, Jorgenson and Zucker (2004) suggest that there should be strong alignment between education policy and the key elements of a curriculum including curriculum contents and learning competencies, learning experiences, teaching strategies and assessment techniques. The ways the curriculum contents and learning experiences organized should be consistent with the goal of education, the learning areas and the key competencies expected to be achieved at the end of the program. It should be noted that the internal (i.e., students) and external (i.e., employers or the world of work) customers are the most important elements to be considered during policy making and curriculum planning if the schools are to be very relevant. This informs policy makers, curriculum experts and textbook writers to define the potential employers and demands of students and the world of work and to identify and organize the learning areas and curriculum experiences (subject matter content, learning outcomes and learning experiences) that are relevant to equip the students with the competencies required from the workforce and compulsory to fit the requirements of the labour market.

The world of work demands employees to possess the three domains of competencies, namely, cognitive, affective/interpersonal, and intrapersonal skills. The three domains of competencies comprise of skills that are vital to prepare students for work. Hence, in order to prepare secondary school students for the world of work, the concerened bodies are required to integrate the non job specific skills in secondary school curriculum. Relevance and quality of the instructional activities and assessment tools employed during instruction are equally important to prepare students for work. Consequently, teachers are expected to possess adequate subject matter knowledge, pedagogical knowledge and pedagogical content knowledge and skills and employ varieties of interactive pedagogical strategies that are appropriate to encourage students acquire the core work skills. Furthermore, policy makers, curriculum experts and teachers can prepare relevant policy, curriculum, and instructional plans and deliver accordingly if only they have adequate awareness about the competencies the world of work demands from the workforce. The extent to which curriculum experts, textbook writers and teachers understood the concern of the education policy and the role of secondary education affect relevance of secondary school curriculum and instruction.

The end result of education system is to satisfy the needs of the society, the needs of students, the demands of the next level of education and the world of work (Fredriksson, 2004). In

Ethiopia, preparing students to meet the requirements of the world of work is among the major expectations from secondary education (MoE, 2009). Hence, secondary schools are expected to equip students with the fundamental knowledge, skills and attitudes the labour markets demanding from the graduates. Public sectors, governmental institutions, industries, and non-governmental organizations are the major labour markets that have been inviting secondary school graduates. This can be possible when the education policy is relevant and adequately address the world of work, and secondary school curriculum and instruction provide students with relevant work skills/competencies that are mandatory to be effective in the world of work. Supporting this, Jain and Prasad (2018) stated that relevance of education depends on relevance of the education system as a whole and relevance of what the system offers to the learners; education policy, curriculum, teaching-learning process, learning environment, teachers, educational resources, and school leadership. Relevant curriculum addresses competencies needed in the world of work as contents, learning objectives and learning experiences. Hence, the intent of the curriculum contents and the ways they are presented, the target of the learning outcomes and the focus of the learning experiences should address the competencies employers (or the world of work) expected from secondary school graduates (workforces). Similarly, the pedagogical strategies employed during instruction should encourage the development of the core competencies the labour market expecting from secondary school graduates.

Chapter III

Research Design and Methodology

Introduction

This chapter is devoted to present the research design and the methodological procedures employed to assess the space accord 'preparation for work' in secondary school curriculum and instruction. The presentation of the research design and methodology entails and deals with a number of subjects, materials, techniques and methods utilized to realize the intended purpose of the study. Hence, this section comprises of the following sub-sections: an explanation of the research design, sources of data, instruments of data collection, data collection procedures, discussion of ethical issues pertinent to the study, pilot testing, and methods of data analysis.

3.1 The Research Paradigm

A paradigm refers to the philosophical positions which explain about the nature of reality, what can be known and how this knowledge can be attained (Lincoln, Lynham, & Guba, 2011). Ontology, epistemology and methodology are the three foundational constructs of a research paradigm, and the paradigms are explained in terms of these pillars. The current study employed mixed approach which integrates both qualitative and quantitative data (and research methods) that suit the demands of the identified basic research questions. The rationale to employ pragmatist approach which combines both post-positivist and interpretivist (constructive interpretive) positions (Saunders, et al., 2012) in this study is the fact that paradigm advocates a mixed approach which is a combination of quantitative and qualitative research approaches (Shan, 2021). Positivism assumes that producing scientific explanation of reality can be possible by implementing quantitative approaches or methods of data collection and analysis through experiment and observation (Fard, 2012). Unlike positivists, interpretivists are concerned with understanding the subjective world of the human experiences and concentrate on qualitative rather than quantitative aspects (Cohen et al., 2018). Unlike positivists' view which assumes single reality, for interpretivists, reality is a social construct that holds multiple interpretations (Saunders, et al., 2012). For interpretivists, the researchers socially construct knowledge through their personal experiences of the reality within the natural setting being investigated. The paradigm assumes reality is non-singular which holds that there is no single reality and all

individuals have their own and unique interpretation of reality; any phenomenon being studied has multiple realities.

Pragmatist research philosophy claims that the choice of research method is mostly determined by the research problem, and hence, the researchers have freedom to choose the methods, techniques, and procedures that best meet their needs and the research aims (Cohen et al., 2018). Pragmatist position is considered as the most essential philosophical foundations for this study because of the basic research questions used in the study demands both qualitative and quantitative data and methods (Saunders et al., 2012). The quantitative research approach is associated with the postpositivist paradigm, while the qualitative research approach is coupled with the constructive/interpretivist position (Feilzer, 2010). In this research, pragmatism provides a middle position both methodologically and philosophically by offering a mix of quantitative and qualitative methods to answer the research questions. Pragmatism recognizes that there are many different ways of undertaking and interpreting research and no single point of view can give the entire picture of the issue under investigation (Creswell & Creswell, 2017). In line with the application of mixed methods research, pragmatism encourages integration of the results of quantitative and qualitative research that give answer to the identified research questions (Creswell & Clark (2011).

Pragmatism involves collecting data simultaneously using methods drawn from both quantitative and qualitative methods that best addresses the basic research questions and allows integration of the results during analysis and interpretation phases (Creswell & Creswell, 2017). Although pragmatic approach provides middle position for the two extremes, in relation to the connection of theory to data and making inferences from data, pragmatic approach differs from each of the positivist (quantitative) and constructivist (qualitative) approaches (Morgan, 2007). That is, while inductive approach connects theory and data in qualitative methods and deduction is used to connect them in quantitative approach, pragmatic approach most likely relies on abduction to move back and forth between induction and deduction. A research that uses both qualitative and quantitative data and methods to give answer to research questions formulated to appraise relevance of secondary school curriculum and instruction best fits with pragmatism. This study used pragmatist approach means that multiple perspectives and analysis were employed to examine relevance of secondary education using the methods that involve collection, analysis,

and integration of qualitative & quantitative data that best addresses the research questions designed to evaluate the space accorded 'preparation for work' in the curriculum and instruction.

3.2 The Research Design

Mixed method approach was employed to study the space accorded 'preparation for work' in secondary education curriculum and instruction. The approach was selected with the assumption that it involves collecting, analyzing, and integrating (or mixing) quantitative and qualitative data (and research) in a single study (Onwuegbuzie & Johnson, 2006). One of the purposes of this form of research approach, qualitative and quantitative in combination, provides a better understanding of a research problem or issue than either research approach alone. Mixed research approach is preferred not only because both qualitative and quantitative approaches complement one another, but also to minimize limitations the study would have faced if only one method is used (Creswell, 2009). In conducting this research, mixed method approach gives opportunities to gather data from different sources using different methods and thereby get a relatively complete picture of relevance of secondary school curriculum and pedagogical practices of the schools.

Of the various methods of mixed design**,** concurrent mixed design was employed to enable the researcher to collect qualitative and quantitative data separately and simultaneously in a single phase and to converge or merge the two data sets in the interpretation phase (Creswell & Clark, 2011; Onwuegbuzie & Johnson, 2006). Triangulation enables confirmation or corroboration of data collected from different sources. The concurrent triangulation mixed design allows integrating the quantitative and qualitative data in a preferred sequence (Creswell, 2009). The perfered design gives opportunity to collect and analyze data simultaneously and separately and interprets the result in a way that gives answers to the research questions (Creswell & Clark, 2011). Besides, the approach allows the researcher to converge quantitative and qualitative data and provides a comprehensive analysis of the problem under investigation. In this study, therefore, collection and analysis of qualitative and quantitative data was conducted simultaneously and separately. During the interpretation phase, however, the researcher integrated the two data sets by bringing the separate results together.

Content analysis and case study were the methods chosen to examine relevance of secondary school curriculum and instruction to the world of work. Case studies can be used with both

qualitative and quantitative data (Yin, 2003). Yin describes case studies as exploratory, explanatory and descriptive. Thus, descriptive case study was selected with the assumption that it can use a wide range of data collection methods that allow the researcher to use observation, questionnaires, document analysis and interview with key informants (or the data sources) as data collection tools (Tharenou, Donohue and Cooper, 2007) in Oromia regional state, Ethiopia.

Depending on the design, case studies can be grouped as single or multiple (Yin, 2003). The difference between the two designs is that the single case study entirely deals with a single case, whereas in multiple case designs two or more cases are covered in the investigation. Based on a 2 x 2 matrix, there are four designs for case study, namely, single case holistic design, single case embedded design, multiple case holistic design and multiple case embedded design (Yin, 2018). In case study, the embedded units are the subunits of analysis within the main case. This study employed a multiple case embedded design to study relevance of secondary education to the world of work through assessing the space accorded 'preparation for work' in the curriculum and instruction. Hence, curriculum and instruction are the two major focus areas of the study. The units that are embedded in each case, such as learning objectives, activities and exercises and end-of-units-questions; and instructional activities and assessment techniques are studied using multiple case embedded study design.

In this research, content analysis was used to analyze curriculum experiences that are part of secondary school curriculum materials using the core work skills employers expecting from secondary school graduates. Krippendorf (2004) explains content analysis as a research technique that involves a systemic analysis of text, including images and symbolic matter, which makes replicable valid inferences from the material examined. Quantitative and qualitative content analysis methods were used to review the learning objectives and learning experiences that are included in textbooks with reference to the skills graduates require to be effective in the world of work. The Ethiopian Education Policy and related documents and curriculum framework (Kg-Grade 12) were reviewed using qualitative and quantitative content analysis.

3.3 Sources of Data

Both primary and secondary data sources were used to collect data that are pertinent to the specific concern of the study. The primary data sources were employers, secondary school principals, teachers and students, employees who graduated from secondary school and

curriculum experts. Secondary school student textbooks were also the major data sources of the study. Data collected from different policy documents such as the Education Policy (TGE, 1994), curriculum framework for KG- G12 (MoE, 2009) and Education Sector Development Programs (ESDPs) are the equally important data sources identified to study the issue under investigation.

3.4 Samples and Sampling Techniques

The target population of the study includes secondary school principals, teachers and students, employers (public and non-public organizations), employees (secondary school graduates) and subject curriculum experts. Adama and towns surrounding Finfine (Addis Ababa), such as Sabata, Burayu and Dukem were selected purposely to take part in the study due to the fact that the areas were rich in the expected major data sources. That is, industrial parks/zone and private factories that have employed huge number of secondary school graduates from where the researcher needed to collect data were adequately available in the areas. East Wollega zone was selected among areas where there is no or limited factories are available using convenient sampling technique.

Adama Industrial Park, Easter Industrial Zone and Industrial zones found around Finfine (Addis Ababa) were selected for the reason that they have large number of employees graduated from secondary schools. In addition, the preliminary assessment showed that the context of the Industrial Zones/Parks or industries found in the different parts of the country is similar. There were 4 and 118 companies in Adama Industrial Park and Eastern Industrial Zone, respectively. Five companies from Eastern Industry Zone, namely, Hang Xiang Textile, Chang Lang Textile, Aofan Manufacturing, Shunfa Textile Manufacturing and Shuai Jet Textile, three companies from Adama Industrial Zone, namely Antext Textile, Kingdom Ethiopia Linen, and Sunshine Ethiopia Wool Textile industry that have relatively large number of employees graduated from secondary school were selected purposely. Three factories among companies found around Finfinne, namely, Plastic factory found in Burayu, Textile Industry, and Super Double T. General Treading found in Sabata, were part of the study. Six public organizations, three from Burayu town and the other three from Nekemte took part in the study using convenient sampling methods to learn the skill gap between the knowledge and skills the organizations required from secondary school graduates and the skills acquired by the employees. The reason behind using this method is because of the fact that the nature of the public sectors found in the different areas

(zones and towns) of the country is similar and the responsibilities of employees holding similar positions in the organizations are the same. However, selection of the public sectors was mainly based on the number of employees graduated from secondary schools serving in the different sectors. Although the areas were selected because of their proximity, the organizations that have (relatively) large number of employees graduated from secondary were included in the study.

The Education and Training Policy, Curriculum Framework for KG to grade 12, and Education Sector Development Program (ESDP) were the documents analyzed due to their relation to the issue under investigation. The aim was to appraise how the skills demand of the world of work is explained in the documents. Aims and objectives of education, curriculum, educational structure, and assessment policy were used as units of analysis in reviewing the 1994 Education Policy document. The Curriculum Framework (Kg-Grade 12) was reviewed using the vision, goal, learning areas, key competencies, teaching method and curriculum structure included in the document. The framework was analyzed to understand how the goal of secondary education is presented and to investigate relevance of the key competencies, learning areas, and the suggested instructional strategies to be implemented in the actual classrooms.

Among secondary school subjects (courses), Chemistry, History, Biology and Geography for Grade 9-12 were taken for the purpose of content analysis. This was intentionally done to include both streams (Natural Science and Social Studies). Moreover, the subjects were preferred because of relevance of the nature of the subjects to the issue under investigation - the researcher thought those subjects have significant contribution in preparing students for work. The selected subjects were expected to have different activities, exercises, projects and experiments that require students and encourage them to develop the work skills that are relevant to the demand of the world of work. Besides, these subjects encourage students to visit different areas including industries and historical and geographical areas. This kind of educational tour demand students to collect, analysis, and synthesis data, communicate and work with others and report their observation in oral and/or written form. The instructional objectives, activities, and exercises and end-of-unit-questions included in grade 9-12 of the four subjects were analyzed to evaluate their relevance to the skills the world of work requires from employees.

The secondary school subject curriculum experts of the selected subjects were purposely included for the reason that they are experts of the subjects and assigned to directly involve in

the process of curriculum materials preparation. Four managers (2 HR and 2 supervisor) from the two Industrial zones, 12 technical administrators/supervisors and 12 human resource managers of the specific companies (i.e., a total of 38 respondents) and 12 managers of human resource of six public organizations (i.e., a total of 40 individuals) were interviewed purposely because of relevance of their position (responsibilities) to the required data and their understanding about the skills requirement of the different positions in their respective organizations and employees' performances. To understand the acquired skills and the expectation of employers, three or two employees graduated from secondary school of each company (industry) and public organization (i.e., a total of 32) were taken for the interviews using simple random sampling technique.

Among secondary schools in the two study sites, Burayu Secondary School, Dire Secondary School, Wato Secondary School, Nekemte Comprehensive Secondary School, Ifa Secondary School, and Gute Secondary School, a total of 6 schools were included in the study using proportional (equal number from the two study sites). Proximity was not the main reason for using convenient sampling techniques; the context of public secondary schools in Ethiopia is almost similar regardless of their location. That is, the training and composition of the teachers and school principals, the nature of students, school management system and availability of resources and facilities in the schools that are in the different parts of the country is similar. Moreover, to make the samples representatives of the context of the different sections of the country, the schools were selected from urban areas (i.e., towns surrounding Finfine/Addis Ababa), towns far from the center of the country (i.e., Nekemte) and rural area (i.e., East Wollega zone). Among the teachers in the sample schools, only 241 teachers who were available during visit to school filled-in and returned the questionnaire. Regarding student respondents, equal number of students from each sample schools and proportional number of students from each grade (Grade 9-12), a total of 214 students were chosen randomly to report their opinions and observations through questionnaire. Six (all) school principals were selected purposely to take part in the study for the fact that they have direct contact with and great responsibilities to coordinate and supervise the instructional activities employed in the schools. Four classrooms, one for each subject from each sample school; a total of 24 classrooms were selected randomly and observed while teachers were teaching in their classrooms. Pedagogical centers, laboratories,

libraries, classrooms and out-side classroom (in-school) environments of all the sample schools were observed to assess availability of instructional materials and facilities in the sample schools.

3.5 Instruments of Data Collection

The instruments of data collection that were used in this study included interviews protocols, observation guide, document analyses guide and questionnaires.

3.5.1 Questionnaire

Questionnaire is one among the data collection instruments used in this study. It allows researchers to secure data from many people and selected for its natural characteristics that let informants express their ideas and opinions freely. The main purpose of the questionnaire was to obtain information from secondary school teachers and students on their perceptions about the purpose of secondary education and their observations regarding relevance of the curriculum elements and pedagogical practices employed in secondary school classrooms. Both open-ended and close-ended items were part of the questionnaires constructed and administered to both secondary school teachers and students. Based on the nature of the items, the close-ended questions were prepared in five level Likert-type scales ranging either from strongly agree to strongly disagree (strongly agree, agree, undecided, disagree, and strongly disagree) or from very high to very low (very high, high, medium, low, and very low) or never to always (never, rarely, sometimes, often and always).

The 60 and 58 items of survey questionnaires for teachers and students respectively (See Appendix A and B) were developed depending on the specific objectives of the study and the theoretical framework identified earlier. In addition to demographic background of informants, the questionnaire items were organized in four different sections based on the nature of the specific objectives and basic research questions. The first part was to assess perceptions and understandings of teachers and students on the role of secondary education. Part two to part four of the questionnaires were designed to collect data on relevance of curriculum, relevance of pedagogical practices of the school (instructional activities, conduciveness of school environment and availability of educational resources and assessment techniques) and relevance of learning objectives and curriculum experiences, respectively. The questionnaires were commented by advisor and two professionals (PhD holders) in the area. The questionnaire filled

by students was translated to Afan Oromo and commented by two MA holders in Teaching Afan Oromo and Literature so that students easily understand the intent of the questions.

3.5.2 Interview

Interview is verbal interchange where the interviewer attempts to elicit information from another person (interviewee) by asking questions (Longhurst, 2010). In this research, semi-structured interview is preferred to gather in-depth data from curriculum experts, employers, employees (graduated from secondary school) and school leaders. The reason behind preferring semi-structured interview items was the flexibility in which new questions can be forwarded during the interview based on the responses of the interviewee. Moreover, semi structured interview was preferred as it was done with an interview guide in a flexible way that address relevance of secondary school curriculum. Interview guide that are flexible to respond to the questions so that the interviewees could add anything that they should include will be prepared was prepared and administered. Supporting this, Johnson and Christensen (2012) stated that semi structured interview allows the researcher to add new questions or delete ones if found necessary in the interview. The interview guide in the semi-structured interview consists of a list of questions to cover the research questions that will help the researcher attain objectives of the study (Longhurst, 2010). Hence, the interviews were organized around a set of open-ended questions with other questions emerging from the dialogue between interviewer and interviewees which will offers participants the chance to explore issues they feel are important. Since the interviewees were from different ethnic groups, the interview guides were translated to Afan Oromo and Amharic.

In this study, the interview protocols were developed for different categories of informants based on their roles in secondary education and organizations employing graduates. Interviews were made with curriculum experts, school leaders**,** employers (technical administrators, supervisors and human resource managers) of public and non-public organizations and employees graduated from secondary schools. The purpose of the interviews conducted with curriculum experts was to understand perceptions of curriculum experts on the role of secondary education and relevance of curriculum elements to the labour market. Besides, it was used to evaluate how far the intent of the education policy was translated to the components of curriculum framework, including goals of secondary education, key competencies and learning areas. In the same vein, the

instrument was designed to investigate the extent to which the competencies that are relevant to the demand of the world of work and addressed in the curriculum framework are translated to curriculum materials (textbooks). This in turns helped the researcher to examine how far the education policy, curriculum, and instruction are aligned to meet the demands of students and the world of work. Besides assessment of their perceptions, the interviews conducted with the experts were made to collect data to evaluate the level of coherence between the education policy, curriculum, and pedagogical practices of secondary schools. School leaders were interviewed to learn their understanding about the role of secondary education. It was also to investigate relevance of pedagogical practices of the schools and conduciveness of the schools' environment to prepare students for work. Collecting data on the link between the schools and the world of work was the other concern of the interviews made with school leaders.

The interviews conducted with employees graduated from secondary schools and employers (technical administrators, supervisors and human resource managers of the organizations that have employed the graduates) were to learn the extent to which secondary education has been preparing students for work. Moreover, it was used to know the gap between the acquired and the skills the labor markets/the world of work demanding from secondary school graduates. Before conducting any interview, there is need to inform interviewees of the purpose of the research and how the data obtained through the interview will be used (Bell, 2004). Therefore, I took few minutes with all the interviewees to brief them about the aim of the study and to get acquainted with them at a personal level. Each interviewee was told to feel free to respond to the questions because the information gathered from the interview will be confidential and their names will remain anonymous. The average time used to conduct interview with curriculum experts was on average 51 minutes. The range of time used during interview with human resource heads', supervisors and technical administrators of different organizations was 37 minutes to 53 minutes. It was 42 minutes for employees on average. Field notes and tape recorder were used to record data obtained during interview.

3.5.3 Observation

As a data gathering tool, observation is perceived as an important instrument that can satisfy detail information demand of the investigation. Observation allows the researcher get first-hand information and reliable data in its natural setting. Tharenou, Donohue and Cooper (2007)

consider observation as it enables a researcher to collect data from the physical environment and human activities. In the current study, observation is perceived as the process of observing and recording events or situation observed during classroom instruction, from in-school (outside classroom) environment and the work environment of employers. Moreover, the data obtained from observation was also used to triangulate the interview and questionnaire data. Observation checklist for both classroom observation and outside classroom (in-school) environment observation were constructed using the literature review and used to gather relevant and detailed information regarding the actual classroom instruction and availability of educational resources that are essential to equip students the intended skills, respectively. Therefore, direct observation method was chosen to gather data about the pedagogical of practice of the schools in class rooms and provision of resources out of class rooms in the school settings.

The classroom observations were intended to gather information about the teachers' pedagogical practices in how they manage instructional activities in the secondary school classrooms. Examining relevance of teachers' pedagogical practices to prepare students for the world of work was the major intent of the tool. Selection of classrooms for observation was based on the teachers' convenience. That is, the observer (researcher) informed each of the teachers before getting into their classrooms. The main focus of the observer (researcher) observation was the basic elements of instructional process, including classroom organization (individual, pair or group work), major instructional activities (tasks), mode of interaction, assessment methods, teacher's activities, and the role of students observed during instruction. It was preferred to find out the dominant teaching method secondary school teachers were employing. In other words, the tool was also used to examine the extent to which student-centered approaches (which are rooted in constructivist views) are implemented in the actual classrooms and to understand how well the instructional activities teachers practice encourage students acquire the core work skills. More specifically, classroom observation was conducted to identify the types of instructional strategies, the nature of instructional activities employed in the classrooms, time used for different instructional activities and the types of questions reflected by teachers and students during instruction. Observations were made in twenty-eight classrooms in six schools using the pre-constructed checklist. A minimum of one and a maximum of two observations were

conducted for each teacher's classrooms. The time used for each classroom observation was 40 or 45 minutes based on the time allocated for one period by the schools.

The major goal of the observations made outside the classrooms using observation checklist was to learn availability of instructional resources and facilities that are essential to support the pedagogical activities that encourage students to acquire the skills they need for future career. More specifically, outside classroom (in-school) observation was conducted to assess availability of relevant instructional materials and facilities found in the schools, including pedagogical resource centers, teaching aids, laboratories, laboratory chemicals and equipments, libraries, reference materials, ICT room, computers, as well as water and electricity supplies. In this study, observations were also conducted while secondary school graduates were doing their regular tasks in both public sectors and non-public organizations to identify the skills demand of the work environments and the skills they were using in demonstrating their responsibilities. Moreover, the tool was used to obtain firsthand data through close observation of employee's activities while they were managing tasks individually and as member of a team and to triangulate the data related to the skills demand of employers collected from the different groups of informants through interviews. The data collected through observations were recorded using field-notes and picture recorder.

3.5.4 Document Analysis

Documents analysis is a data collection instrument used to analysis contents of written documents that have discussed issue related to the concern of the study. Since this study follows the mixed-methods research approach, a mix of both quantitative and qualitative methods of content analysis were employed. Content analysis as a method of research and data collection instrument can be descriptive or inferential (Yin, 2018). In this study, the descriptive content analysis was used to describe relevance of contents incorporated in the education policy documents, curriculum framework, and secondary school textbooks. Aims, goals, objectives, visions, educational structure, curriculum, instruction, assessment techniques, key competencies, and learning areas that are included in the documents were analyzed both quantitatively and qualitatively. The intention of the analysis was to examine how the world of work and the skills employers required are addressed in the different documents.

After preliminary reading of the 1994 Education Policy documents, the key areas that have direct concern with the issue under investigation were identified for analysis. As a result, aim and objectives of education, curriculum, educational structure, and assessment were identified for review. Review of the curriculum framework was to understand the core competencies and skills, areas of learning, teaching methods, and assessment techniques suggested to be used during curriculum planning and actual classroom teaching-learning processes in terms of the requirements of today's labour market. These parts of the document were analyzed in terms of content (qualitative) and frequency (quantitative) of their representativeness to the required work skills using the checklist developed out of readings of literature. The intentions of GEQIP and ESDP III to VI were also analyzed in line with the demand of the world of work. The learning areas, key competencies, vision, teaching methods and assessment techniques are the units of analysis identified from the curriculum framework for KG-G12 was also through preliminary reading. Qualitative analysis and frequency count were the techniques used to evaluate relevance of the document to the demand of the world of work.

Analysis of the textbooks was conducted to examine the extent to which the different parts of the textbooks encourage the development of the work skills that are vital for employees to be successful in the world of work are incorporated in the curriculum. Learning objectives, activities and exercises and end-of-units-questions were the key variables (unit of analysis) for the textbooks analysis. The quantitative content analysis was made to identify the frequency count of statements of objectives, activities, review exercises, and end-of-units-questions that are representing the identified work skills and categorized under the three domains of competencies, namely, cognitive, interpersonal and intrapersonal domains. Moreover, the learning objectives were reviewed with reference to the three domains of learning (cognitive, affective and psychomotor) and sub-domains.

Each document and the identified units of analysis were to understand how the work skills are represented in the documents and to identify the extent to which the documents was intended to encourage students acquire the core competencies and the intended work skills. Moreover, the analysis was to appraise the strength of the aligning bond between the three interconnected columns of education: policy, curriculum framework, and curriculum and instruction, with regard to the issue under investigation. Analysis of objectives, activities and review exercises

and end-of-unit-questions that are included under each chapter of the textbooks and the identified parts of the policy documents was made in terms of the indicators for each work skill based on the discussion in V Murthy (2016) and Erawan (2010). In this study, the specific work skills used to review the units of analysis were the skills preferred by most of the organizations across the globe (Esther et al., 2018). The textbooks analysis was carried by the researcher and one well-informed subject specialists of each subject. The data extracted from the textbooks were recorded on data sheets prepared by the researcher and analyzed quantitatively unit by unit and summarized to show the details of each of the textbooks. The textbooks and the policy documents were accessed in hard copies from schools and in softcopy from the internet.

3.6 Pilot Test

After the data gathering instruments were developed, they were pilot tested before the actual use for the final data collection. The function of pilot study was to improve quality of the instruments, to establish the trustworthiness of instruments, to improve questions and the question format, evaluate the research procedures, and thereby to enhance quality of research (Creswell & Creswell, 2017). In this study, the main interest of the pilot test was to assess whether relevance of curriculum and pedagogical practices of the school could be investigated effectively through the proposed instruments. More specifically, the pilot test conducted for the purpose of the study was to try-out whether the data collection instruments are appropriate and effective in investigating perceptions of teachers, students and curriculum experts on relevance of secondary education, curriculum and pedagogical practice employed in the classrooms (Wiersma & Jurs, 2005). The term 'pilot study' is described as limited-size research where the researcher uses a small sample that will not participate in the main study to investigate whether there is any bias in the research process (McMillan & Schumacher, 2017). The pilot was conducted using questionnaire, interview guide and classroom observation checklist. For the purpose of this study, the pilot test was conducted in two high schools in Burayu town, with thirty teachers, thirty students and two classrooms of the schools. One curriculum expert at MoE and two human resource managers of two different factories found in Burayu town were part of the pilot test.

After collecting the questionnaires, the researcher read all items of the questionnaires to identify the comments, check the responses item-by-item, and look for items without responses as well as

responses that suggest misinterpretation of questions or response bias. That is, the data collection instruments were tested for their suitability in collecting and making analysis of the issue under consideration. The reliability index for the questionnaire items resulted from the analysis made using Cronbach's Alpha Coefficient was found to be 0.86. Many researchers agree that a reliability coefficient of 0.7 or above is acceptable (Tharenou, Donohue & Cooper, 2007). Based on feedback from the pilot study, modification was made to the data collection instruments. For instance, a few items from the questionnaires were merged together and a few others were revised in terms of content and language clarity. The contents and arrangement (order) of observation checklist and interview guides were revised using the feedbacks obtained from interviews and observations made during pilot study. Finally, the amended tools were used for the final data collection.

3.7 Data Collection Procedures

The data collection process of the study was accomplished following specific procedures. After preparation of the data collection instruments was finalized, the data collection was done using the consent letter received from department of curriculum and instruction, Addis Ababa University.

The first section interviews were made with subject curriculum experts at Ministry of education. Interviews were done after directorate of curriculum development team was communicated and the experts were negotiated to allow me to get in contact with each expert using the letter received from the university. A request for permission was communicated to heads of the selected public sectors, Industrial Zone and Park and other selected middle level companies using the letter obtained from Addis Ababa University. Interviews made with heads of human resources and supervisors/experts and employees graduated from secondary education working in industries were completed before the interviews conducted with informants from public organizations. The interviews made with employers and employees of the organizations were conducted concurrently.

The document analysis was focused on secondary school textbooks, education policy document and curriculum framework for Kg-grade 12. At the beginning, issues discussed in the Education Policy and curriculum framework documents were analyzed one after the other. All learning

objectives, review activities and exercises and end-of-unit-questions included in the four subjects were carefully identified and reviewed using the checklist prepared for the intended purpose.

The data collection using questionnaire and classroom observation in each school was done concurrently. In order to administer the questionnaire and conduct observations, the researcher first contacted the school directors and asked for cooperation with the letter from the department of Curriculum and Instruction, Addis Ababa University. The questionnaires were distributed to teachers and students who showed their interest to fill in the questionnaire. Before classroom observations, the researcher consulted teachers to get permission to observe their classrooms during instruction and they were informed about the purpose of the observation (research). Besides, they were informed that observations have no relation with the evaluations done by the school principals to measure performance of the teachers. Moreover, the researcher promised them that the data obtained from the classrooms and through questionnaire will be kept confidential and their names would not be disclosed in the data analysis and discussion sections.

3.8 Method of Data Analysis

Data collected from different groups of respondents, documents and school environments were organized in different themes based on the basic research questions. Quantitative data was analyzed using descriptive and inferential statistics. Accordingly, data gathered through questionnaire from students and teachers were tallied, tabulated and analyzed using frequency, percentage, mean, and standard deviations. SPSS-24 was employed to analyze the data that were obtained through questionnaire using close ended questions.

Data collected via document analysis from the different documents were mainly analyzed qualitatively. Some of the data collected using the same tool were summarized and described quantitatively using frequency and percentage. The qualitative and quantitative methods of content analyses were employed based on the nature of data collected from student textbooks and the policy documents. The analysis was conducted using the skills that are recognized as essential for employers of secondary school graduates and in the way it gives answers to the research questions. The policy documents were mainly analyzed qualitatively using the skills requirements of the labour market and summarized quantitatively using tables. Similarly, analysis of the textbooks was conducted qualitatively to identify to which domain of competencies and the specific work skills the learning objectives, activities and questions listed

under exercises and end-of-unit-questions are categorized using the mentioned criteria and theories. The results of the analysis were described separately for each subject using the three units of analysis and summarized qualitatively using percentage.

Qualitative data obtained through open-ended questions, observation and interview were analyzed qualitatively and narrated next to the quantitative data that have similar concern. Some of the responses obtained using interview from employees and employers of secondary school graduated were analyzed quantitatively using frequency and percentage and described qualitatively in terms of the work skills identified by the researchers as they are essential for employers. Interviews made with subject curriculum experts and school principals were analyzed qualitatively and described vis-a-vis the aim of education, the goals of secondary education and the skills demand of the world of work. Data collected through observations were used to triangulate the data collected using questionnaire by seeking corroboration from the data collected using different tools. More specifically, data collected from classrooms through observations were analyzed qualitatively and narrated next to the data obtained through questionnaires intended to evaluate relevance of pedagogical practices of the schools to the skills demands of employers. The data collected through observations of outside classrooms were analyzed based on the nature of the data, qualitatively or qualitatively using frequency and percentage, and described next to the data collected using questionnaires and interviews to identify the extent of availability of the expected resources and facilities that are essential to prepare students for work.

3.9. Ethical Issues and Considerations

Ethical consideration is an essential part of the research that distinguishes it as a quality scholarly work. The concept ‘ethics’ refers to the moral guidelines and standards that every researcher uses in evaluating their behavior during the research process (Babbie, 2016). For research to be conducted at any institution, permission for conducting the research should be obtained before any data is collected. Such permission should be obtained from the institutions and from the respondents/participants themselves. To get consent, copy of an official letter obtained from Addis Ababa University department of curriculum and instruction that verify that I am a student and my research work is for academic purpose was given to heads of the organizations that have the right to allow me to collect data using questionnaires, observations and interviews.

In conducting this study, ethical issues expected to be maintained during data collection, analysis and interpretation were demonstrated to the required level. The ethical standards of the research are also guaranteed by ensuring voluntary participation in the study. The identified participants were informed that they are free to decide whether to participate or not. In this regard, to get their consent all organizations and informants, the researcher informed them about the purpose of the study and requested for permission before the actual collection of data. Each respondent were informed that the information gathered from the interviews is confidential and their names will remain anonymous. As promised, the participants' privacy and confidentiality were guaranteed by not disclosing their names to outsiders. That is, the confidentiality of the data collected from the individual informants (interviewees) was kept. Similarly, the name of the institutions was not used in the research report for the purpose of ethical considerations. Knowing the appropriate measures to protect their confidentiality and anonymity, secrecy of information is assured and the respondent were not threatened by the questions. They were also informed not to write their name on any page of the questionnaire. In-school and classroom observations were carried out with permission and assistance of the school principals and the subject teachers. The visits made in industrial parks and in the selected companies found in the industrial parks were with the consent of the overall managers of each park and heads of each sample companies, respectively.

Chapter IV

Presentation, Analysis and Interpretation of Data

Introduction

The main purpose of the study was to assess the space accorded 'preparation for work' in secondary school curriculum and instruction with over-all aim of evaluating relevance of secondary education to the world of work. This section deals with the presentation, analysis and interpretation of qualitative and quantitative data collected from the primary and secondary sources through questionnaires, interviews, observations and document analysis. The sequence of presentations of analyses of data and the findings followed the order of the basic research questions.

The first part of the chapter presents about educational background and work experience of the different groups of respondents. The major data presentation and analysis results were organized and described in five main sections and nine sub-sections. The first section deals with the purpose of secondary education described in the policy documents vis-à-vis- understandings of the key stakeholders. The next part presents the skills demand of the public sectors and nonpublic organizations. Section four and section five of this chapter deals with relevance of secondary school curriculum and pedagogical practices of the schools to the skills demand of employers, respectively. The last section of this chapter presents the strength of the bond aligning the education policy, secondary school curriculum and pedagogical practices of the schools in terms of the skills the world of work demand from the workforce graduated from secondary school.

4.1 Characteristics of Respondents

In this research, interview and questionnaire are the tools used to collect data from curriculum experts, teachers and students. The interviewees at MoE level were from four subject curriculum areas. The subject curriculum experts who participated in the study had a minimum of Master of Arts (MA) or Master of Sciences (MSC) degree in their respective fields of study. One among the social science subject curriculum experts has PhD. Data obtained through interview showed that the subject curriculum experts had strong academic background, high level qualification and work experiences in teaching at schools and in curriculum planning.

Table 1: Respondents Characteristics by Level of Education

No	Level of education	Frequancy	Percentage
1	Grade 9-12	214	39.85
2	Grade 12 complete	32	5.96
3	BA/BSC	158	29.42
4	MA/MSC	132	24.58
5	PhD	1	.18

As indicted in Table 1, all school principals were qualified with Master of Arts degree in school leadership or educational planning and management. Regarding educational background of teacher respondents, it was identified that 48.96% of the teachers have Bachelor of Arts (BA) or Bachelor of Sciences (BSc) or Bachelor of Education (BED) degree and 51.04% have Master of Arts (MA) degree or Master of Sciences (MSC) in different areas of specializations. All human resource heads, HR experts and supervisors participated in interviews had Bachelor of Arts (BA) degree or Bachelor of Science (BSc) degree in different subjects, such as Mechanical Engineering, Sociology, Law, and Management. All employees took part in the study were high school graduates. The total number of secondary school students who participated in this study is 214.

Table 2: Respondents Work Experience

No	Year	Teachers		Employers (Head of human resource, supervisors, experts)	
		No	%	No	%
1	1-5	5	2.07	40	100
2	5-6	39	16.18	-	-
3	11-15	103	42.74	-	-
4	>15	94	39.01	-	-

As can be seen in Table 2, 81.75% of teachers had more than 10 years of teaching experience and 18.25% of the teachers had less than 11 years of work experience. This shows that majority of the teachers participated in the study have adequate teaching experience. This doesn't mean that the pedagogical strategies they have been employing in their classrooms were relevant to equip students with the skills need of the world of work. The work experience of all respondents who were serving as human resource managers, supervisors and experts in public sectors and nonpublic organizations was less than five years on the current positions.

4.2 The Purpose of Secondary Education

This section presents the purpose of secondary education by critically examining the policy documents and understandings of key stakeholders.

4.2.1 Purpose of Secondary Education in the Policy Documents

The Education Policy (TGE, 1994), curriculum framework for KG-Grade 12 (MoE, 2009) and ESDPs (MoE, 2005; MoE, 2010; MoE, 2015; MoE, 2021) are the documents reviewed to understand the aim of education and the purpose of secondary education in Ethiopia.

Purpose of Secondary Education in the 1994 Education and Training Policy Document:

As indicated in the policy document, one among the pitfalls of the pre-1991 education was lack of relevance to the demand of the country (TGE, 1994). The evidence mentioned in the document says, "Absence of interrelated contents and mode of presentation that can develop student's knowledge, cognitive abilities and behavioral change by level, to adequately enrich problem-solving ability and attitude are some of the major problems of our education system" (P. 2). One of the implications of this is that the principal goal of education was not to equip students with the competencies that help them to be productive citizens. In response to the problem, it was suggested to provide students with the knowledge, skills, abilities and attitudes essential to enable them make all rounded participation. Preparing students for work and encouraging them to develop positive work habits, respect for work and high regard for work is also among the major goals of education in Ethiopia. It was also understood that the general objectives of education listed in the policy document have direct association with the skills required in the world of work. The objectives are stated as follows (TGE, 1994):

> *… developing the mental potential and problem solving capacity of individuals, bring up citizens who are trained in various skills and who appreciate aesthetics and show positive attitude towards the development of science and technology, and cultivating the cognitive, creative, productive and appreciative potential of citizens (p.7).*

Besides, as indicated under introduction part of the education policy, strengthening individual's problem-solving capacity starting from basic education and at all levels, is one of the aims of education in Ethiopia. These show that some of the skills students need for work and further education are highly emphasized in the policy document. From analysis of the issues discussed under objectives of education and introduction part of the policy document, it is possible to conclude that preparing students for the world of work was counted as one among the concerns of education.

In order to attain this goal, as stated in the policy document, secondary education was named as a four year program (grade 9-12) and divided into general secondary education (grade 9 and 10) and upper secondary education (grade 11 and 12). The first cycle was assumed as the source for trainable persons who would either join training for a labor force or university preparatory program (MoE, 2005). In reality, general secondary education (grade 9 and10) offers academic subjects intended to serve students who are interested to join upper secondary education (grade 11 & 12). That is, the subjects (courses) students learn at grade 9 and 10 have minor association with the track intended to prepare students for work. As the naming (preparatory education/school) and the curriculum structure which is categorized in two streams: natural science and social science indicate, the upper secondary education was designed to prepare students for higher education. This confirms that there was no strategy designed for preparation for work in the second cycle of secondary education. Moreover, the educational system and curriculum structure don't allow schools to have multiple educational pathways that may address the diverse interest of students and the different destinations that are open for secondary school graduates. Moreover, the issues discussed under curriculum structure section don't allow schools to have different types of schools and curriculum structure. From these results one can conclude that the secondary education follows the 'one-size-fits-all' curriculum structure which encourages students and schools to give priority to prepare them for higher education.

The 1994 Education and Training Policy suggested diversified technical and vocational trainings parallel to general education for those who leave school from any level of education. Besides, the intention of Technical and Vocational Education and Training (TVET) program was designed to accommodate those who fail to proceed to the next level of education or not interested to go to preparatory school due to different reasons. Those who are academically fit are allowed to proceed to the next level of education. This can be taken among the reasons why secondary education/curriculum was criticized as it was anchored in 'one-size-fits-all' view. Moreover, grade 10 national examination results determine the destination of student after general education; to start journey to higher education or attend TVET program which help them to train with job specific technical skills that allow them to join the world of work immediately after completion of the training; the room given to interests of students and prerequisites to join the training was limited. Agriculture, crafts, construction, basic book keeping, industrial arts, construction, commerce and home science are the areas of technical and vocational trainings suggested for students not interested to continue general education. This show, technical and vocational trainings or courses was suggested to prepare students for the world of work. However, MoE documents and previous studies confirmed that the same strategy that didn't solve the problem of relevance of education was implemented. This shows that efforts had been made before 1991 to improve relevance of secondary education by establishing polytechnic schools and comprehensive schools to integrate vocational courses with academic curriculum. The intent of all the attempts made before 1991 were to prepare students for work using different modalities, though the results were not to the expected level. Moreover, data obtained through interview with employers attracting secondary school graduates confirmed that job specific skills are not mandatory for novice employee graduted from secondary schools; they provide pre-service trainings for novice employee on job specific technical skills. Hence, it is possible to conclude that the policy document is not sufficient to guide secondary school to adequately equip students with the skills required in the world of work.

In addition, the 1994 policy aspires to produce citizens who are equipped with various skills. However, the purpose of the 'various' skills and the level of education at which these skills will be learned is not mentioned. Moreover, the suggested secondary school curriculum structure doesn't allow the schools to teach students the required skills. One among the problems

identified with the slightly ignored structure of secondary education was lack of space for the work skills and absence of permeability between upper secondary academic and vocational program. That is, there was no common area that fastened the two tacks that allow students to go to the next level of academic or vocation education or the world of work immediately after completion of secondary education based on their interests. The curriculum structure and the nature of the two tracks encourage students only to follow liner vertical growth. Besides, the curriculum structure of secondary education doesn't show commitment to integrate the skills demand of the world of work in the curriculum as independent subject or in the academic courses. Therefore, the emphasis given to preparation for work and further education in secondary school curriculum structure was not equal; mainly it was to serve those who are destined to higher education.

Purpose of Secondary Education in the 2009 Curriculum Framework (for KG – Grade 12):

Similar to the Education Policy, it is indicated in the curriculum framework document (MoE, 2009) that the purpose of secondary education is to prepare students for the world of work and for further education. The result of analysis of the document revealed that base-line skills, higher-order skills, life skills, participation and contribution, independence, adapting to change, and time management are the key competencies and skills students need to live, learn, and work. It was also suggested that the curriculum should produce creative thinkers, problem solvers, informed decision makers, IT literate and who will be able to adapt to change. Based on the findings of the study it can be concluded that majority of the competencies and skills the world of work demand from employees graduated from secondary school are clearly mentioned in the document. However, the experts did not clearly indicate the specific skills to be integrated in the curriculum for the different grade levels. For instance, the specific skills to be learned at secondary school level and specified to be integrated in the curriculum were not identified.

Regarding the learning areas to be covered at secondary school level, the study found out that majority of the subjects suggested to be offered at secondary school level are academic oriented; Language (English, Afan Oromo and Amharic), Mathematics, Biology, Chemistry, Physics, History, Geography, Civics and Ethical Education, Information and Communication Technology (ICT) and Physical Education. Among these, Language (English and Afan Oromo/Amharic), mathematics, civics and ethical education and ICT are common courses at upper secondary

school level. Biology, chemistry, physics, and technical drawing for natural science students and general business for social science students are the subjects prescribed to be offered at grade 11 and 12. From this data it is possible to infer that the number of subjects that are essential to prepare students for the labour market inviting students immediately after secondary education is insignificant. Moreover, there is no evidence to claim that the skills required in the world of work and prescribed to be integrated in the curriculum are sufficiently integrated. Consequently, the relevance of the secondary school in terms of inclusion of the basic knowledge and skills required in the world of work into the learning areas is doubtful.

There is an argument which assumes integrating vocational courses with academic subjects as one among the strategies to open opportunities for students to acquire both academic knowledge and develop skills needed in the world of work. However, the intent of adding vocational courses to academic curriculum was most often to equip students with job specific knowledge and skills. Though the intention of the statements of the policy documents was to provide equal room for the world of work and the next level of education, the actual strategy presented in the curriculum framework was to add one or more vocational subjects to provide students job specific skills. The world of work demands not only technical skills, but also transversal work skills. However, if we look back to the history of secondary school in Ethiopia (Tekste, 1990), we can understand that the modalities intended to use vocational subjects as the only solution (for instance; 1960s comprehensive secondary education) were not adequately answered the problem of relevance of education through adding vocational subjects to the academic curriculum. This may encourage us to open our eyes to investigate the pitfall of the past education systems intended to improve relevance of secondary education so that we can bring in innovative strategy to accommodate the skills actually required in the world of work in secondary school curriculum. Consequently, one can conclude that the current and the emerging secondary school curriculum structure seems undermine the importance of the skills the workplace demanding from employees graduated from secondary school. Hence, curriculum structure and the learning areas could be taken as among the areas that deviated from the concern of the policy document. This confirms that the education system of the country continued to give the big picture to the academics in which the prime intent is to prepare students for higher education.

Effective education systems create strong aligning bond between curriculum, instruction and assessment so that the different elements of the system work towards a common set of educational goals. As discussed in the curriculum framework document, constructivist theory and student-centered approaches were suggested to prepare the curriculum and to guide teachers' instructional activities in the classroom. The approach gives attention to active participation of students in the learning process. Active learning strategies was recommended to encourage development of the work skills through conducting experiments, investigations and interviews, discussion or debate, role playing and simulation activities and case studies, reflective thinking, visiting to a factory (observation) and learning through doing (MoE, 2009). Different literature shows that constructivists theory and student-centered approach are relevant to prepare curriculum that are effective to encourage students develop the work skills, namely, critical thinking skills, creative thinking skills, problems-solving skills, cooperation and team work, communication skills, time management, self management and technical skills. Thus, it is reasonable to conclude that effective implementation of active learning methods, the prescribed method to design and prepare the curriculum and to deliver lessons, is relevant to prepare students both for work and higher education. However, lack of coherence among the different parts of the document limits the level of attainment of the intended goal of secondary education in general and preparation for work in particular.

Table 3: An overview of most prevalent work skills mentioned in the policy document and curriculum framework

Documents	Critical thinking	Problem solving	Communication	Creativity	Collaboration& teamwork	Decision making	Self regulation	Use of technology	Technical skills
1.Education policy									
i. aims		√			√			√	
ii. objectives	√	√	√	√			√	√	√
2.Curriculum framework									
i. vision	√	√		√		√		√	
ii. values	√	√		√	√				

iii.	principles	√	√	√					√	
iv.	Key competencies	√	√	√	√	√	√	√	√	
v.	Curriculum preparation	√	√	√	√	√				

Source: Collected from MoE (1994) and Curriculum Framework (MoE, 2009)

The results of the study revealed that there is no coherence between the aims of education and the objectives listed in the policy document in terms of importance of the work skills employers expect from graduates. Among the required work skills, only problem-solving skills, teamwork and the skill to use of technology are emphasized in the aims education of the country, Ethiopia. Though some of the skills categorized under interpersonal and intrapersonal domains of competencies are no addressed in both documents, critical thinking skills, problem-solving skills, communication skills and self management skills are (relatively) well reflected in statements of objectives of education (TGE, 1994) than the others. In the same manner, it was learned that there is no considerable congruency among the elements mentioned in the curriculum framework regarding representation of the skills demand of the world of work. Communication skills, collaboration and teamwork, decision-making skills and self-regulation are less emphasized in the document (MoE, 2009). In both documents, the ability to accomplish tasks independently and time management skills are totally denied. The emphasis given to the skills employees most frequently require to demonstrate their responsibilities and the world of work expect from graduates is found below the expectations of employers as compared to the skills they required as need arises. Based on these results, it is concluded that the policy documents are not strong and sufficient to guide the subsequent documents and the implementation processes to prepare students for the world of work.

Purpose of secondary Education in the Education Sector Development Program:

Within the framework of the 1994 Education and Training Policy, the government of Ethiopia launched Education Sector Development Program **(**ESDP). The main thrust of ESDP was to improve access, equity, quality and relevance of education and efficiency of schools (MoE, 2005). Moreover, EDSP is to facilitate realization of the overall mission of all educational institutions in the country intended to build the capacity to solve problems, train in various professions and skills so as to participate in the economic development of the society, with positive outlook for the science and technology. The primary goal of ESDP-I, along with other objectives, was to improve access of education. ESDP-II was designed mainly to ensure equity

of education. This does not mean that the concern to improve quality of education, school leadership and availability of infrastructure and educational materials were denied. In addition to the concerns of ESDP-I and ESDP-II, the subsequent ESDPs (III-VI) emphasize the need to produce skilled and trained workforce.

The overall goal of the education sector during the implementation period of ESDP-III was to produce qualified and trained workforce with the necessary quality and quantity at all levels (MoE, 2005). Satisfying the need for trained human power is also among the major concerns of ESDP-III. That is, meeting qualitative and quantitative demand for workforce was among the goals of ESDP-III. Besides, ESDP-III was planned to satisfy the demands of tertiary level education and improving the learning achievement of pupils so that they will be successful in examinations (MoE, 2010). As indicated in MoE (2010), ESDP-IV was designed to sustain equitable access to quality secondary education services as the basis and bridge to the demand of the economy for human resources. Enhancing the perfornamces of schools to effectively prepare students for the world of work is also among the focus areas of ESDP-IV. Within the framework of the ESDP IV, the MOE has developed a General Education Quality Improvement Package (GEQIP) (MoE, 2010). Improving relevance of curriculum and effectiveness of schools are among the target of ESDP through the implementation of GEQIP (MoE, 2015). The overall purpose of GEQIP is to improve quality of education through adapting the concept of the school effectiveness model (MoE, 2010).

The ultimate objective of ESDP-V was to improve the attainment and learning outcomes for all students (MoE, 2015). More specifically, during the imlementationof ESDP-V, the goal of general education was to provide students with the knowledge, skills and values help them to be productive and responsible citizens. Also, the program was intended to enhance access and equity and internal efficiency of schools. One of the expectations was to provide education that meets the diverse learning needs of all children, youth and adults, develop competent citizens, and assist children, youth and adults to share common values and experiences and embrace diversity are among the priority areas (MoE, 2015). Moreover, ESDP-V was concerned to promote importance of addressing the needs of learners and future destinations of students and the need to integrate interpersonal and intrapersonal skills in the curriculum. Improving teaching and learning, relevance of curriculum content and instructional methods was also among the

intents of ESDP V (MoE, 2015). Based on these results, it is possible to infer that the aim of secondary education during ESDP-V was to equip students with the competencies and skills students require to become effective in the world of work through improving quality and relevance of education.

As indicated in ESDP-VI, education is assumed as a tool for cultivating cognitive, social, moral, psychological, and vocational attributes (MoE, 2021). During implementation period of ESDP-VI, the Ethiopian education and training system is expected to develop the skills, competencies, and attributes that learners need to acquire to become productive and nationally and globally competitive citizens (MoE, 2021). The skills that are essential to attain the mentioned objectives of education are creativity, critical thinking skills and leadership skills. The data obtained through observations and interviews from employers and the work environments confirmed that these skills and competencies indicated in ESDP-VI are among the skills employers require from secondary school graduates. In summary, the results obtained from analysis of ESDPs revealed that the concern to prepare students for work and providing them with the skills they need to become effective workforce at local and international level is among the aims of the education sector aspired to achieved through implementation of ESDP.

4.2.2 Purpose of Secondary Education: Educators' and Students' Perspectives

This section presents how secondary school subject curriculum experts, teachers, school leaders and students perceived the purpose of secondary education.

Curriculum Experts Perspectives

Subject curriculum experts are among the front-line stakeholders in curriculum planning and preparation of curriculum framework as well as student textbooks. Interviews conducted with subject curriculum experts at Ministry of Education was to understand their views on the roles of secondary education and relevance of secondary school curriculum to the requirements of the world of work is presented and analyzed as follows.

All subject curriculum experts at Ministry of Education of Ethiopia (MoE) were asked to show their understanding about the goal of secondary education and objectives of his/her subject. One of the social science curriculum experts reported that the major purpose of secondary education is to help learners learn from the past and predict and improve the future and to create self reliant

generation (social science expert, Robsa, 14 October 2021). The intention of the idea of the expert was to magnify the importance of the past and the present historical events to acquire the knowledge that would encourage student to improve the future. That is, education provides students the knowledge and attitude that support learners to understand historical events presented in the world and develop positive attitude and global (broader) perspective that will help them to contribute their part in improving the future world. It was also responded that, secondary school education is to enable students develop the skills that help them to be effective in their personal lives and to live and work with others. This implies that, secondary school social science education encourages students to acquire and improve their social skills, including communication skills, team work and collaboration skills that are essential for employees to survive in the world of work. Though these skills are mentioned as essential for students' future life, the expert didn't mention preparation for work as a major goal of secondary education and as requirements of employers attracting secondary school graduates. Supporting this view, the other social science curriculum expert said:

> *The major purpose of secondary school education is to prepare students for national examination and university. Social sciences equip secondary school students with theoretical knowledge and practical skills. The target of the curriculum contents and learning activities included in the curriculum materials encourage students to develop critical thinking skills, reflective thinking skills, practical skills and positive attitude towards the environment. However, the major focus of the subject matter contents included in the materials are more of theoretical in nature and the target of the learning objectives is to achieve the concepts discussed in the textbooks (social science expert, Fufa, 15 October 2021).*

It was learned that curriculum experts had no clear understanding of the role of secondary education as preparation students for the world of work. The interview data showed that few of the skills under investigation are perceived as the skills expected to be achieved from secondary school social science education. However, they had no clear understanding about the importance of the specific skills for employers and employees graduating from secondary school. The result of analysis of data obtained from the social science experts revealed that equipping students with the skills the world of work demand from employees graduated from secondary school or applicants interested to join the world of work immediately after secondary education wasn't considered to be part of social science curriculum. Similar to the social sciences, natural sciences

curriculum experts didn't perceive preparation for work as the major roles of secondary education. One among the natural sciences experts explained secondary education as follows.

> *The purpose of secondary education is to prepare students for higher education. The goal of my subject is to enable students acquire theoretical knowledge and to develop cognitive skills, practical skills, problem-solving skills, scientific skills and attitudes that helps them to solve problems and create innovative ideas and technologies* (natural science expert, Obsa, 15 October 2021*).*

Another expert opined:

> *The goal of secondary education is to provide students with the knowledge and skills that are essential to help them to be competent at national and international level. The purpose of natural sciences subjects offered at secondary school level is to teach the skills that are essential to solve problems scientifically. In addition to the scientific concepts, secondary schools are required to teach crosscutting issues and contents designed to bring behavioral change to students* (natural science expert, Jiksa, 5 January 2022).

As it was understood from social sciences experts, though the identified works skills that are vital to prepare students for work were perceived as essential for secondary school students, no evidence was detected in their response to conclude as the respondents from natural sciences were conscious about the link between the said skills and the goal of secondary education; preparation for work.

The procedures and materials used to prepare curriculum materials are among the factors that are decisive to realize relevance of secondary education. Curriculum experts at MoE were also asked the question: "Do you think that the documents used to prepare secondary school curriculum materials (e.g., textbooks) are relevant and sufficient?" The responses show that almost all curriculum experts took part in the interviews responded that the education policy, international and local research findings, the existing curriculum material(textbook) and flow chart were the documents used to prepare curriculum framework, syllabus and student textbooks. Experiences of different countries were also used as a reference point to determine the shape and contents of the curriculum. Regarding the process, on one hand, they believed that the documents are relevant and sufficient to prepare secondary school curriculum materials that are appropriate to realize the aim of education and the goal of secondary. On the other hand, some of them weren't conscious about the link between secondary education and the demand of the world of work.

As discussed earlier, relevance is among the criteria used to select curriculum contents and learning experiences. Though, the word relevance is an elusive term, relevant to 'what', 'how', and 'why?' is the question that determines relevance of the issue under consideration. The study revealed that curriculum experts tied relevance of curriculum experiences to the nature of the subjects, grade level at which contents are learned and students' cognitive developmental level (Obsa, 15, October 2021). It was identified that, they weren't confident enough to say objectives, activities and review questions incorporated in the textbooks were relevant to prepare students for work. Two of the interviewees (one from each stream; social science and natural science), however, argued that few of the skills that are essential in the world of work are included in the textbooks. Particularly, one among the experts said, "Review activities included in textbook were intended to encourage student to develop communication skills, critical thinking skill (reflective thinking), problem solving skills, and teamwork and cooperation skills" (Bona,15 October 2021). However, some of the informants weren't conscious enough about the role of the skills in the world of work. They did not consider the skills during selection of the learning experiences expected to be part of the textbooks. This indicates that the demand of the world of work wasn't part of the criteria used to select the curriculum experiences incorporated in secondary school textbooks. Thus, it can be concluded that, excluding the skills the world of work demanding from employees graduating from secondary school from the criteria used to select curriculum experiences during the process of curriculum making was among the factors affected relevance of secondary school curriculum.

Evidences obtained from different public and nonpublic organizations confirmed that the performance of the employees wasn't to the expectation level of the work environments. Employers questioned relevance and adequacy of the curriculum and effectiveness of the school to provide students with the skills the organizations demanding from applicants and employees graduating from secondary schools. In response to the question asked to know if needs of employers were addressed in the curriculum, one of the natural sciences experts explained in the following words:

> *A curriculum is changed based on the need of the government to change the curriculum in use or the demand to update the curriculum. Evaluating the curriculum in use and assessment of international best practices are among the first and major tasks of curriculum experts in curriculum development process. However, since the potential*

employers of secondary school graduates aren't clearly identified, it is unusual to expect integration of demands of the organizations employing the graduates in the curriculum. Hence, I'm not confident to assure you that the skills and knowledge the organizations demanding are included in the textbook (Jiksa, 5 January 2022).

The philosophy of education, curriculum development model and theory of learning that curriculum experts and textbook writers apply in preparing curriculum materials are among the factors that determine the nature and organization of curriculum experiences included in the textbook. The response obtained through interview from curriculum experts revealed that there was no clearly identified and defined philosophy of education and curriculum development model used to guided the process of curriculum making. However, the practices seem to align with the objective model (for two natural sciences and one social science experts) and process model (for one social science expert) were employed to identify and organize the elements of curriculum materials. The above data confirmed that the curriculum in use was developed without considering the principles and philosophy that determine relevance of curriculum and instruction. Regarding the learning theory used to organize curriculum materials (textbooks), all interviewees agreed that constructivism is the theory prescribed to select and arrange contents and learning experiences included in secondary school textbooks. The theory promotes student-centered approach that supports students to develop the competencies essential to prepare them for work and further education. However, they argued that the recommended approach wasn't used in reality during preparation of the materials. In connection with the philosophy and theories of learning, one of the experts stated as follows:

Constructivism is the theory suggested to prepare secondary school curriculum. However, I'm not sure that textbook writers have made use of the approach while they were selecting and organizing learning experiences. We had no clearly defined and identified philosophy of education and curriculum development model that guided preparation of curriculum (Robsa, 15 October 2021).

This shows that the design and preparation of curriculum materials was not guided by internationally selected philosophy, theories and principles of education. This might be due to lack of understanding and skills to use or ignorance of the mentioned principles or due to other reasons. Hence, it seems possible to conclude that lack of clearly articulated philosophical guideline during curriculum design and preparation must have affected relevance of secondary school curriculum to the different destinations of secondary school graduates.

Curriculum development process should involve different groups of people. The Education policy emphasizes that curriculum planning shall be done in cooperation with the concerned stakeholders, and participation of professionals and social groups in preparation of the curriculum (TGE, 1994). Lindeberg (2009) suggested that all stakeholders must be trained to participate effectively in curricula development, implementation, and evaluation, in order for participatory processes to be truly effective. Curriculum experts were asked to report the nature of stakeholders participated in the process of curriculum making. Theoretically, they said, teachers, curriculum experts, different public sectors representatives, all regional states curriculum experts, international organizations, consultants (advisors), parents, students and teachers' association are the expected stakeholders in curriculum development process. Practically, however, only two, subject curriculum experts and the international or local organizations satisfied the requirements of MoE had been involved in textbooks preparation under the supervision of MoE curriculum development team. This doesn't mean that the others were totally ignored. Few groups among the list were participated in the validation process. However, one of the experts expressed his worry about secondary school curriculum making process in Ethiopia as follows:

> *Though secondary school curriculum framework was designed by group of experts, the textbook preparation was open for any international and local organizations. The organization selected to prepare textbooks can invite local and international textbooks writers that have no/little idea about the context of the country. There was time when universities are assigned to prepare high school curriculum. Moreover, the chance to monitor competence, and relevance of the knowledge, skills and experience of textbook writers to prepare relevant curriculum was limited (Obsa, 15 October 2021).*

Regarding the involvement of the different stakeholders, all the respondents agreed that employers of secondary school graduates weren't clearly identified, and hence, their involvement was not apparent. This clearly reveals that individuals or group of individuals expected to contribute their part to prepare relevant curriculum weren't involved in the curriculum making process. Moreover, they weren't confident enough about relevance of the knowledge and experiences of those who took part in curriculum development process. For instance, one among the natural sciences experts who has been taking part in preparation of curriculum framework and as editor of textbooks expressed his observation as follows:

One among the challenges that have been affecting relevance of curriculum and alignment between the intention of curriculum framework and syllabus and textbooks was the way secondary school textbooks prepared. The textbook writers were not under our (MoE experts') supervision; they were selected and their activities were monitored by the local or international organizations identified to prepare the textbooks. Based on my observation of the textbooks that I have evaluated, I'm not convinced with the experience, knowledge and skills of the textbook writers to prepare relevant contents, activities and end-of-unit exercises. Consequently, I can say that adequacy of stakeholders involved to add their part in enhancing relevance of the textbooks was not to the required level (Jiksa, 5 January, 2022).

Based on the results reported here based on the data from the informants as well as the documents, it can be inferred that the level of involvement of the stakeholders expected to participate in curriculum making process was not satisfactory. It was also learned that, demands of the potential employers of secondary school graduates was not adequately incorporated in the curriculum. This was one among the factors limited relevance of the curriculum to the world of work.

Pupose of Secondary Education: School Leaders, Teachers and Students Perspectives:

The way teachers and students perceive the role of secondary education determines relevance of the teaching methods and instructional activities they employ in the classrooms during instruction. Consequently, teachers and students were requested to write their belief about the purpose of secondary education. The summary of teachers' responses shows that the main role of secondary education is to prepare students for examinations and the next level of education, i.e., higher education. About 94.34 % of the teachers believed that the purpose of secondary school is to provide students with the knowledge that are essential to be successful in examinations and to get prepared for higher education. Data from majority of employees graduated from secondary schools also confirmed that the role of secondary education is to prepare them for university entrance examination. In response to the question asked to identify their destinations after secondary education, majority of them reported that their plan was to join university, though they weren't successful to achieve that. Only 5.66% of teachers believed that secondary school is to prepare students both for work and higher education. They mentioned university, technical and vocational colleges as well as teacher training colleges as examples for which secondary level education is preparing students. Few students who were interested to create their own job or

employed in nonpublic or public organizations considered secondary education as it prepares them for the world of work they will join after graduation from higher education.

The result of the study showed that the school principals had no adequate understanding about the role of secondary education in preparation of secondary school graduates for work. They perceived preparation for teacher made examinations and national examination and for higher education as the major target of the schools. They had no adequate awareness about the skills students require for the world of work they will join immediately after secondary education. Besides, most of the schools used students' academic achievement, particularly students' national examination results as major criteria to appraise effectiveness of their schools. The number of students who scored high or low examination results for each subject was used to evalaute teachers' performances. Regarding this, one of the school principals said,

> *The goal of secondary education is mainly to prepare students for higher education and to produce citizens who are competent at national and international level. In order to prepare them for examination and acquire the knowledge that help them prepared for higher education, the schools are expected to manage the teaching-learning process focusing on improving students examination results (Falmata, school 4 leader).*

On the same issue, another interviewee reported,

> *The target of our school plan and its implementation is to improve students' academic achievement including teacher made test and national examination. In order to achieve this goal, the school leaders negotiate with teachers on the benchmarks to be achieved at the end of a semester or the year and continuously encourage them to meet the agreed-on standard. Teachers' performance evaluation is also directly or indirectly referred to students examination result (Bilisuma, school 6 leader).*

Another interviewee explained the role of teachers and school principals in achieving the purpose of secondary education as follows:

> *The main purpose of secondary education is to prepare students for examination that let them to enter higher education institutions. Consequently, teachers are required to equip students with the knowledge that are essential to be effective in examinations and higher education. As school leaders, our responsibility is to make the teaching-learning processes and school environment conducive for students' maximum learning and succeed in entrance examination (Gamta, school 2 leader).*

Perceptions of school principals of different schools regarding the purpose of secondary education are almost similar. However, one among the school leaders believed that the purpose of secondary education is to encourage students develop positive attitude and broader

perspectives and acquire the skills that are essential to live and work with others and to be effective in their future life (Bosona, school 1 leader). Another interviewee also explained,

> *The purpose of secondary education should not be limited to preparation for examinations and higher education. Our curriculum and schools should equip students with the skills that help them to be productive citizens. Hence, the target of teachers' instruction should be not only to teach theoretical knowledge but also skills that are essential to be effective in next level of education and life (Gamta, school 2 leader).*

Although two school principals tried to emphasis importance of education for future life, none of them mentioned preparation for the work among the purposes of secondary education.

Questionnaire was employed to learn how secondary school teachers and students perceived secondary education. As shown in Table 4, the mean values 4.23 and 3.39 represents that both teachers and students (respectively) perceived preparation for the next level of education as part of the purposes of secondary education. The grand mean scores (3.77) indicate that majority of the two groups of respondent perceived preparation for higher education as the major purpose of secondary education. Item 2 was to understand the level of agreement of respondents with the idea which explains secondary education as it prepares learners for the world of work. The grand mean value (2.45) shows that, most of the students and teachers didn't consider the world of work among the immediate destination of secondary school graduates. Regarding their destination after secondary school, only 4% of the students were interested to join the world of work either as employee or create their own job as well as to go to university. About 96% of the students were interested only to go to universities. This implies that most of the students weren't conscious about the world they will join after secondary education other than higher education. From these results, it can be concluded that teachers and students had no adequate understanding about the other mission of secondary education, i.e., preparation for work.

Table 4: Teachers and Students Responses on the Purpose and Relevance of Secondary Education

No	Secondary education:	M (T)	M(S)	Agg. M	SD
1	prepares students for higher education	4.23	3.39	3.77	1.25
2	prepares students for work (world of work)	2.61	2.30	2.45	1.12
3	considers the needs and problems of the society/country	3.39	2.95	3.15	1.23

4	considers the diverse interest of students	3.28	2.80	3.05	1.18
5	Secondary education promotes holistic development of students	3.02	3.11	3.06	1.17
6	Serve students who have planned to go to higher education institutions and world of work equally.	2.67	2.43	2.55	1.37

Note. M (T) = mean for teachers, M(S) = mean for students, Expected mean = 3.00

Education should be aligned to the role of education in society and societal expectations and demands (Opertti, 2017). In education, the term relevance typically refers to curriculum experiences that are either directly applicable to the personal aspirations and interests of students (personal relevance) or that are connected in some way to real-world issues, problems, and contexts (life relevance). As shown in Table 4, however, the grand mean value, 3.15 shows that teachers and students slightly agreed with the item which explains secondary education as it considered the needs and problems of the society. This doesn't mean that all the essential needs and problems of the society expected to be covered at secondary school level is perfectly manifested in secondary school curriculum. Personal relevance occurs when education is connected to an individual student's interests. Thus, secondary education ought to be relevant to students' interests, their lives and to their future careers. This demand curriculum planners to assess the needs and interest of the problems of the society as are part of curriculum making process so that they will address the need and interest of the society and secondary school students in particular. Here, it is equally important to understand that students are not equally interested to the different areas of knowledge and skills. The response from the informants, however, depicted that the position of secondary education in responding to the diversified needs and interests of students was not high (mean= 3.05). This shows the concern given to assess and address the diverse interests of students wasn't to the expected level. Thus, it is possible to infer that secondary school curriculum wasn't prepared to the level it could serve the diverse needs of students.

As discussed in MoE documents, secondary education should facilitate students' holistic development by exposing them to the knowledge, ability, skills and attitudes that are relevant to the various aspects of human development. In response to the question asked to identify if secondary education was to promote holistic development of youngsters, both group of respondents, students (3.02) and teachers (3.11), agreed that secondary school curriculum wasn't

designed to the level it could facilitate the holistic development of learners or didn't give equal room for all aspects of human development. That is to say, secondary education wasn't equipping students with the knowledge, skills and attitudes needed to be effective in the diverse areas of occupations.

Secondary education curriculum needs to strike a balance to meet the needs of young people who are interested to enter the labour force directly from secondary school and those who need to proceed to post-secondary education [tertiary education, or technical and vocational education and training]. However, the respondents didn't agree (mean= 2.55) with the view which perceives secondary education as it was intended to serve equally students who have planned to different destinations: higher education and world of work. Moreover, from the mean values of item 1 and 2, it is possible to conclude that secondary education didn't give equal space for the different destinations after secondary education, and the priority was given to preparation for the next level of education, most probably higher education.

4.3 The Skills Demand of the World of Work

In this section, analysis of data collected through interview from different groups of respondents regarding the work skills different organizations required from applicants and employees graduating from secondary school are presented. Interviews were conducted with human resource heads and technical managers and/or supervisors of the public sectors and non-governmental organizations and with employees graduated from secondary schools. The purpose of the interview was to identify the most critical skills employees should possess to survive in the organizations and employers used as criteria to select among applicants and to evaluate the performance of their employees. Identification of the skills demands of employers and job-readiness of secondary school graduates was based on the responses collected from employees graduated from secondary schools and HR heads, supervisors and technical managers of the non-public organizations and public sectors that have hired secondary school graduates. Analysis and discussion of data collected from public and non-public organizations was made separately.

4.3.1 The Skills Demand of Nonpublic Organizations

Industries are among the organizations where many secondary school dropouts and graduates have been employed. In order for graduates to be job-ready, the skills needed by employers of

secondary school graduates ought to be integrated in the secondary school curriculum and instruction. So as to get hold of a closer understanding of employers' perceptions about the skills that are critical for their organizations and the gap between the skills demand of employers and the skills acquired by employees, the researcher identified few interview guides. The guide was used to collect data from (local) managers, supervisors and employees working in the manufacturing companies of different industrial zones/parks and industries found in the study area.

The results of analysis of responses obtained from the companies in Eastern Industry zone are almost similar. For instance, HR managers of the Industrial Zone reported that majority of employees graduated from secondary school are operators or line/team leaders. Supervisor of the center also confirmed that majority of the employees are secondary school dropouts and graduates. Regarding the selection criteria of the company's supervisor of the industrial zone said, "Interview and practical examination are the tools used to select employees from applicants interested to join the companies found in our industrial zone" (Aga, 20 October, 2022). Concerning the skills demand of employers and the skills employees need to effectively perform their responsibilities in their respective organizations, HR head in one of the companies in Eastern Industry Zone explained,

> *The nature of the skills our company demands from employees depends on their responsibilities. Team leaders are required to coordinate and support operators, smoothly communicate with operators, report to supervisors, solve problems to their level, make decisions, and follow and report disciplinary issues. Operators are expected to use work time appropriately, cooperate and work with others, effectively communicate with team leaders and others, respect work ethics, independently mange their responsibility and show willingness to learn from others (Hayu, HR company 1, 21 January 2022).*

Another interviewee explained the level of importance of the skills as follows:

> *Communication skills, teamwork, time usage, self management (work ethics), technical skills and skills to work independently work are the skills all operators and team leaders always need to demonstrate. Employees are required to show their commitment to solve problem, make decision and critically think when needed. Operators aren't required to demonstrate creativity and leadership skills. In addition to the mentioned skills, team leaders are expected to possess leadership skills (Boru, supervisor in Eastern Industry Zone, company 3, 24 January 2022).*

Supervisor serving in another company in Eastern Industry Zone reported that leadership skills, creativity and decision-making are the skills that are not mandatory for novice employees

graduated from secondary school (Qulqulu, Supervisor of company 2 in Eastern Industry Zone, 21 January, 2022). However, communication skills, cooperation, teamwork, time management, self regulation, critical thinking skills and problem-solving are the skills all employees must possess to survive in the company. Regarding the level of importance of the skills, another supervisor said,

> *Teamwork, time management, independently completing tasks and work ethics are the key skills needed to be demonstrated by employees graduated from secondary schools. Critical thinking skills and creativity are not this much required from them. The major responsibility of the line leader is to supervise, guide and support operators (Jiksa, supervisor in company 5 in Eastern Industrial Park, 24, January 2022).*

Based on these results, it can be concluded that teamwork, collaboration, time management, ability to work independently and self management are the skills companies in Eastern Industrial Zone expecting from secondary schools graduates. However, novice operators are expected to demonstrate creativity, critical thinking, decision-making skills and problem-solving skills occasionally.

The data obtained from employees in different companies is almost similar to employers' views. The study depicted that, though their importance is not equal, appropriate use of time, working and cooperating with others, ability to learn, independently finish tasks, smoothly communicating with others and reporting to the immediate boss, self discipline, technical skills, decision-making and problem-solving are the skills employers expecting from secondary schools graduates. One of the employees said:

> *There are tasks to be accomplished together by 2 or 3 employees and activities to be completed individually. Consequently, we are required to share ideas and cooperate to complete the given tasks together by demonstrating individual responsibilities. Reporting to the line leaders, respecting work time and the rule of the organization, cooperating with others, solving problems and making decisions in collaboration with line leaders are the skills we need to effectively demonstrate our responsibilities (Bosona, employee in company 4 of Eastern Industry Zone, 24 January 2022).*

Another employee explained their responsibilities as follows:

> *We have activities to be implemented at individual level and as a member of small team. Individual operators are required to possess ability to complete specific tasks individually and demonstrate as his/ her part in producing the expected output, respect the work time identified by the company, and communicate effectively with*

others (Galgalo, employee in company 2 of Eastern Industrial Zone, January 21, 2022).

Regarding the skills required from them, team leaders themselves approved the responses obtained from supervisors. Supporting this view, one of the line leaders believed that, leadership skills, creativity and decision-making skills are additional skills they need to effectively manage the lower level operations (Wariyo, team leader in company 3, 21 January 2022). Team leaders are responsible to give technical support to operators, to serve as a bridge between operators and supervisors, and to provide reports to the immediate supervisors.

Based on the data obtained from the different groups of informants, such as HR heads, supervisors, operators and line/team leaders in Eastern Industrial Park, it is possible to summarize that work ethics, time management skills, communication skills, cooperation and teamwork skills and the ability to independently completing tasks are the skills employers most often require from secondary school graduates. Critical thinking skills, creativity, problem-solving skills and decision-making are the skills employees rarely required to demonstrate their responsibilities.

The results of the study revealed that the probability to continue as employee depends on the ability and readiness to learn and adapt to the machines they will use as operator and based on the level of their performance in demonstrating the specific work skills. Regarding the skills acquired by employees graduated from secondary school, though few of them perfectly demonstrate the required skills, majority of employees had face difficulty to demonstrate the skills during the early days of employment. Suppoting this, one of the supervisors explained,

Most of the novice employees are not showing the commitment to demonstrate the acceptable work ethics, willingness to work and cooperate with others, effectively use work time, and independently mange the assigned tasks. In addition, some of beginner employees were faced difficulty to adapt to the work environment and the load of work, independently complete the given tasks and smoothly communicate with others including immediate supervisors (Jara, supervisor in Eastern Industry Zone, company 5, 20 January 2022).

On the same issue, one of the employees said,

During the first few weeks of our employment, most of us were unable to manage the machine and to produce the product the company expected from us. In addition to this, some of the employees were challenged to work with other, learn from others, adapt to the work environment and demonstrate the expected work ethics because of

the work load we did not experienced (Dida, employee in company 3, 24 January, 2022).

The results imply that beginner employees are not equipped with some of the work skills to the level their respective organizations expected from secondary school graduates. Communication skills, work ethics, teamwork, collaboration, completing tasks independently, and ability to adapt to work and its environment are the skills employees faced difficulty to demonstrate appropriately during the early days of their employment. This does not mean that all novice employees were unable to use the mentioned skills. Responses from all groups of respondents in Eastern Industrial zone confirmed that all the companies provided practice based pre-service training on job specific skills. These skills are not part of selection criteria for all companies in the industrial zone. However, HR managers reported that minor basic technical oriented questions were asked to check applicant's alertness/consciousness to understand if he/she can learn things easily.

There were four functional manufacturing companies in Adama Industrial Park. According to data obtained from the company producing Linen in Adama Industrial Park, more than 70% of the employees serving as operator and line/team leader were graduates or dropouts of secondary school. The supervisor of the factory reported that the organization don't require technical skills from applicants graduated from secondary schools (Gadise, supervisor in Adama Industrial Zone, October 20, 2021). Pre-service short-term training is the strategy the company had been using to equip new employees with technical skills the company before they are assigned as operator. She added, however, novice employees couldn't succeed if not ready to learn; if they had no foundational skills they will not survive in the company. On the same issue, another informant exaplained,

> *Interview and written examinations were used for selection purpose. Regarding applicants' achievement, the results of the examinations showed that more than 50% of the applicants were performing below our expectation or requirements of the company. Team leaders are selected from operators based on their performance they demonstrate while they are serving as operator (Gari, HR head in Adama Industrial Park, 20 October, 2022).*

HR expert serving in one of the companies agreed with the views of HR manager of Adama Industrial Park. He presented his understanding concerning the selection procedure and the skills requirements of his company as follows:

> *Leadership skill is not mandatory for operators. However, it is must for team leaders to possess leadership skills, communication skill, decision making skills and problem-solving skills. Team leaders are selected from operators based on their performances associated with leadership skills (Sura, HR expert in Company 1, 29 October, 2021).*

Regading the skills demand of employers, one of the interviewees reported,

> *To effectively demonstrate their duty, employees who graduate from secondary school are required to smoothly communicate with team members, independently perform tasks based on the timeline, cooperate with others, and solve problems related to their tasks, and respect rule and regulation of the company. Their positions may not frequently require them to demonstrate critical thinking skills, decision-making skills and creativity (Ebise, supervisor in company 1).*

On the same issue one of the employees explained,

> *Readiness and ability to learn, oral communication with team leaders and team members, cooperation and work with others, work independently, time usage, self discipline and work ethics are the skills always required to effectively accomplish their responsibilities. Critical thinking skills, problem solving and decision making are the skills employees are required to demonstrate occasionally (Obsenet, employee in comapny 1).*

The results obtained from companies in Adama industrial zone show that teamwork, time management, independent work, readiness to learn, work ethics, communication skills and cooperation are the skills operators need to successfully demonstrate their routine activities. However, they were required to demonstrate decision-making skills, problem-solving skills and creativity when needed. However, most of the experts in the different companies of Adama industrial park were not staifsied with the performances of applicants and novice employees. This doesn't mean that all of them showed poor performance. Regarding operators' performance, observation of one of the supervisors is stated as follows:

> *Majority of employees were good in independent work and respecting the work time. Similarly, majority of team leaders were demonstrating their responsibilities as per the expectation of the organization. However, most of the employees faced difficulty and took many days to learner and adapt to the work environment, even after short term training. Moreover, they were rigid to cooperate and work with others and poor in communication skills and self management skills during the first month since the date on which they started to work as operator (Ebise. Supervisor in Adama Industrial Park, Company 1, 29 October 2021).*

The same interviewee surprised with the poor performance of secondary school graduates in computing easy questions and in writing and speaking about themselves and issues that are supposed to be easily answered using their mother tongue language. To solve the issue under

question, she recommended the schools to teach not only the formulated theories but also the practical skills and soft skills that are essential to work effectively in different work environments.

There was no significant difference between the list of skills mentioned by employers and employees of the same factory. Summary of analysis of employees responses shows that, time usage, ability to work and cooperation with others, work independently and ability to communication with others are the skills essential for employees to demonstrate their responsibilities to the level of the expectations of the organizations. Similar to experts, employees were not interested to deny the challenges they faced during the early weeks of their employment. They blamed secondary schools for the recognized poor performances and unacceptable work habit, behavior and attitude towards work. One among the employees explained his feeling regarding relevance of secondary education to the skills demand of the world of work as follows:

> *We had difficulty to manage ourselves and our responsibilities during the first five and more days of employments. Thus, I can say that what we have learned at secondary school level has no strong connection with the skills we need to be effective in the organization we are working. Moreover, we did not learn, as a result we had no adequate understanding of the skills, attitudes and work habits that are essential to survive in the workplaces (Dagala, employee 2, in company 1, 29 October, 2022).*

Human resource experts also believed that lack of connection between the contents learned at secondary schools level and the skills demand of organizations absorbing the graduates as employee was among the factors contributing for the difficulties they have been facing at the workplaces.

Among employees in Wool Textile Industry, the number of graduates of secondary schools exceeds 75% (Kedija, HR in Adama Industrial Park Company 2, 28 October, 2022). She mentioned self discipline (or work ethics), communication skills, readiness to learn, and open mindedness among the major criteria used to select operators from applicants. Practical examination, interview and written examination were the tools used to screen and select from applicants interested to join their company. The evaluation of the expert revealed that majority of the applicants did not satisfy the minimum requirements of the organizations. Quality of education, education system and performances of the schools are mentioned among the major

causes for the poor performance of employees. Regarding the skills demand of the company, the supervisor reported,

> *To survive in the factory, novice employees must possess communication skills, teamwork and cooperation, problem-solving skills (that demand minor technical skills), leadership skills, time management skills and readiness to learn. This doesn't mean that all the skills are equally required from employees working at different level of positions, though they have the same educational status. Creativity is rarely expected to be demonstrated by operators working on machines (Ararso, Supervisor in Adama Industrial Park Company 2, 28 October 2021).*

Although beginner employees challenged to demonstrate few skills including leadership skills, problem-solving skills, decision-making skills and self control, majority of them were cooperative, smoothly communicate and work with others and appropriately managed their work time (Kedija, HR in Adama Industrial Park Company 2). This doesn't mean that none of the employees was not pushed out of the company due to lack of commitment to show the expected work habits and wastage of work time. Improving teachers teaching performance and relevance of the curriculum were suggested to enhance performance of the workforce.

Manager of Textile Company in Adama Industrial Zone estimated the number of employees graduated from secondary school around 45%. The skills demand of the factory is almost similar to the other companies in Adama iIndustrial Park and Eastern Industrial zone. Regarding the skills requirements of the company one of the informants view is stated as follows:

> *Our organization demand employees to possess communication skills, problem-solving skills, cooperation, teamwork, leadership skills, time management, readiness to learn and ability to work independently. Employees who are serving at the lower operation level are expected to demonstrate creativity, critical thinking skills, self regulation and decision-making skills when needed (Cibsa, supervisor in Adama Industrial Park, company 3, 29 October 2021).*

Concerning performances of applicants who were interested to be hired in the company, it was reported that, they were poor in writing (including mother tongue language) and computing using easy mathematical operations (Gurmu, HR in Adama Industrial Park, Company 3, 29 October, 2021). Similar to the other companies, the specific technical skills were not part of the selection criteria. The organization always arranges pre-serves training for novice employees so that they easily adapt to the work environment and acquire the required job speciic skills that help them to perform as operator. In addition to the technical skills, they are expected to have non-job specific skills. However, the results of the study show that the extent to which operators demonstrated the

required skills was low as compared to the expectation of the organization. This doesn't mean that the performance of all the employees was intolerable. The study revealed that majority of the team leaders in the company (Textile) were effective in communicating with others, lead their groups and cooperate with others. The schools and the education system were equally criticized for the performances of employees. Regarding the connection between the skills required in the workplace and secondary education, one among the employees argued,

> *Similar to the small groups (teams) we have in this organization to complete our tasks together, some of our secondary school teachers sometimes arranged students in small groups to discuss on the give point or to give answers to the identified questions. However, except the skill to work together, the nature of responsibilities we are performing within our teams in our company is not similar to what we had been doing in secondary school classrooms. Unlike the practical activities we are doing here in our company, the group works we had been demonstrating in our classrooms were theory oriented (Kufa, employee in company 3, 28 October 2021).*

The study depicted that the skills demand of companies in the two industrial zones/parks is similar. The skills the companies expect from secondary school graduates and employees demand to survive in the organizations were communication skills, time management skills, teamwork, readiness to learn and adapt, critical thinking skills, problem-solving skills, decision-making skills, independently doing tasks, self-management skills and creative thinking skills. However, these skills are not equally important for the employees. Some of them need to be demonstrated always where as few of them are rarely required.

Regarding the nature of the skills required by employers, there is no significant different between data collected from companies in industrial parks/zones and middle level factories included in this study. For instance, technical administrator of the plastic factory found surrounding Finfine (Addis Ababa) explained,

> *Working with others, willingness to cooperate, oral communication, written report, self disciple (self control), appropriate usage of work time, ability to learn and adapt to the machines, and ability to think critical are the skills our company require from employees interested to stay in the organization. Problem-solving skills and decision-making skills are occasionally required from lower-level employee graduated from secondary schools (Tumsa, company 1 around Addis Ababa, 28 September 2021).*

Unlike the companies in the industrial zone, the middle level factories do not give pre-service training. It was learned that job specific skills acquired through on job practical training and practice with little support from senior operators was among the skills employees need to survive

in the middle level factories. The ability to demonstrate leadership skills is expected from team leaders who are promoted from the operator of machine position to the level that allow them to supervise the operators. Regarding the skills demand of the companies, the results from analysis of the data confirmed that the responses from employees are almost similar to that of the managers and experts. For instance, one among the employees reported,

> *The skills we must possess to survive in the organization and to effectively perform our responsibilities are teamwork, cooperation, oral communication (report), self control, time usage and ability and readiness to learn and adapt to the work environment. The most important skills the company require from us is the ability use the machines at individual and team level to produce the output they expect from us (Gamta, 28 September, 2021).*

Regading the level of importance of the skills under consideration, one of the technical mangers view is presented as follows:

> *Technical skills required to operate machines and support operator are the skill employees need to demonstrate their regular tasks. All the accepted applicants were provided practically trained to demonstrate the technical skills expected from an operator. Critical thinking skills, creativity, decision-making skills and problem-solving are among the skills employees require rarely to do their routine job. In addition to the technical skills, they need to have the ability to learn from and work with other, report to team leader, and respect work time (Bilise, 28 September, 2021).*

Regarding performance of the employees in demonstrating the mentioned skills, it was identified that time management, work ethics, team work and cooperation were the skills well performed by the majority of the employees as a result of the rule and regulation of the organization and the orientation given before they started to deliver their responsibilities (Bosona, 29 September, 2021). However, for the first two to three weeks, employees faced difficulty to adapt to the work environment and communicate (share idea, oral and written report) effectively with others to the level of expectation of the organization. It was also reported that, "unless they demonstrate the skills that are crucial for the benefit the organization, employees who are not capable to perform their responsibilities will be pushed out of the factory" (Jitu, supervisor in company 3, 28 September 2021). However, as the result of the advice provided them, most of the novice employees have improved their performance related to communication skills, willingness to cooperate with others, time management, work ethics and ability and readiness to learn and adapt to the work environment. Both, the technical managers and employees who took part in the interviews identified relevance of education system of the country and teaching-learning

performances of the schools as the major reseasons for the inability of the employees with regard to the skills being mentioned.

The response from human resource manager of one of the factories surrounding Addis Ababa (Finfinne) producing plastic materials is not different from the others. That is,

> *The ability to work and collaborate with others, communicate with other workers and immediate boss,, wise use of work time, self regulation, the ability to learn continuously and adapt to job and work ethics are among the most important skills the company demand from applicants and employees of the company. The organization expects employees to rarely demonstrate creativity, critical thinking skills and leadership skills (Kuma, 04 October, 2021).*

Among the skills that are identified as essential for employees' survival and effectiveness of the company, the most frequently mentioned skills are teamwork, cooperation, respecting work ethics and work time and oral and written report (communication). The nature of tasks in the company do not require operator or team leader to use always creative thinking skills, critical thinking skills and decision-making skills in doing their regular tasks. The organization gave new employees induction training for the benefit of the organization. Consequently, most of the employees had been effectively delivering their responsibilities. However, few of the employees faced difficulty to demonstrate one or two of the skills the organization required from them. It was identified that few of the beginner employees were challenged to communicate effectively, operate machines, make informed decision, solve problems, lead teams and adapt to work environment. Similar to the technical administrators being interviewed, human resource manager of the factory claim that primary schools and secondary schools have been equally contributing for the poor performance of employees (secondary school dropout and graduates).

The Textile factory found around Addis Ababa (Finfine) town was among the factories receiving secondary school dropouts and graduates as employee. Summary of responses of employees graduated from secondary schools indicated that respecting work time and work ethics, self management, readiness to learn, oral communication, teamwork and cooperation are the skills expected to be demonstrated as part of their responsibilities. Human resource expert of the company was interviewed to understand the skills the organization demanding from applicants and employees. She explained,

> *Time management (utilization of time), self management, problem-solving, teamwork, collaborating and working effectively with others, communication, readiness to learn*

and adapt to change were the major work skills the company requiring from applicants and employees. Creativity isn't this much expected from the lower level employees. Decision-making and leadership skills are the skills that are expected to be demonstrated only by team leaders (Kabane, HR head, 10 October, 2021).

According to the response from the same interviewee, majority of applicants were not good in the skills demand of the organization. The interviewee added, however, she was amazed with the outstanding performance of few employees regarding their readiness to learn and easily adapt to the new and higher responsibility to which they were assigned. On the other hand, it was learned that there were employees who were reluctant to do what was expected of them and show unexpected and unaccepted behaviors. Consequently, disciplinary measures were taken due to their trial to weaken the effectiveness of the company (Kabene, HR head).

The extent to which secondary schools visited the companies to open doors for students experiential learning was among the questions posed to human resource manager, technical administrator and employees of all the factories mentioned above. Employees argued that they didn't given an opportunity to visit any governmental and non-public organizations when they were secondary school students. Experts of the companies also confirmed that no secondary school brought students to their institutions for the purpose of experience sharing or educational tour.

Employees were asked to show their evaluations regarding how secondary education is preparing students for the environment where they are working. In response the question, all the interviewed employees argued that they were learned only names and purpose of the different factories exist in Ethiopia theoretically. That is, the curriculum and the schools didn't provide them with the technical skills and soft skills that are essential to effectively demonstrating their responsibilities at their workplaces. They described secondary schools as where they learned theoretical knowledge that has no strong connection with what they are doing in their companies. They acquired the basic technical skills through pre-service short term training or on job practical induction program arranged by their respective companies. Regarding the status of secondary school teachers' teaching methods to equip them with the skills they need for work, one of the employees reported,

Secondary schools are where we didn't get opportunity to acquire and demonstrate practical activities that are important to easily adapt to work and work environment. The teaching methods and paper and pencil classroom examinations used frequently in

our school were not to teach and assess practical skills. In short, the teaching-learning process we offered at secondary school level didn't encourage us to be equipped with the skills our organizations require from us (Rajan, 12 October 2021).

In conclusion, though the companies in different industrial zones and middle level factories are producing different materials, there is no significant difference between the skills demand of the companies. The results of analysis of responses obtained from the different groups of respondents in the different organizations shows that readiness to learn and adapt to work environment, self management skills, work ethics, independently completing tasks, respecting and appropriate usage work time, teamwork, communication skills and technical skills are the skills employees must possess to survive in their respective organizations. Critical thinking skills, decision-making skills, problem-solving skills and creativity are the skills required conditionally. In addition to the mentioned skills team/line leaders are required to demonstrate leadership skills. It was learned that some of the novice employees face difficulty to complete work independently, demonstrate the expected work ethics, learn and adapt to the work environment, communicate effectively, and work and cooperate with others.

Regarding relevance of education they offered at secondary school level, employees argued that what they have been doing in their organizations has no strong association with what they have learned in the schools. They didn't get opportunity to observe and use the equipments and materials that are important to accomplish the expected tasks and to do activities that are essential to prepare them for work. Moreover, it was identified that the instructional activities employed in secondary schools classrooms were not relevant to equip students with the skills the industries required from employees graduating from secondary schools.

According to views those who were working in manufacturing industries and middle scale factories found in the study area, the employment requirements employed by employers was not uniform. That is, some of the companies conducted intensive examination using interview, written examination and practical examination. Few companies provided short term training and orientation focusing on the responsibilities they will demonstrate individually and together with team members for applicants selected for final competition. In both approaches, the basic and common criteria used to select employees from applicants are related to communication skills, time management, teamwork, problem-solving skills, collaboration, readiness to learn, and understanding of the company and knowledge of the specific positions and responsibilities they

are competing to hold. Employees graduated from secondary school reported that written examination and interview were designed to measure their communication skills (speaking, reading and writing skill), ethical issue, work habit and their understanding about the responsibilities the positions require from them. The examination related to practical skills (where it was applicable) was to cheek if the applicants were acquired the basic technical skills that would make easy the training they will be provide by their employers.

Besides, employers were asked to show the level of importance of the skills they were expecting from secondary school graduates. Figure 3 shows summary of the percentage of employers who responded very high or high to the question 'To what extent does your organization require the mentioned skills from employees?'

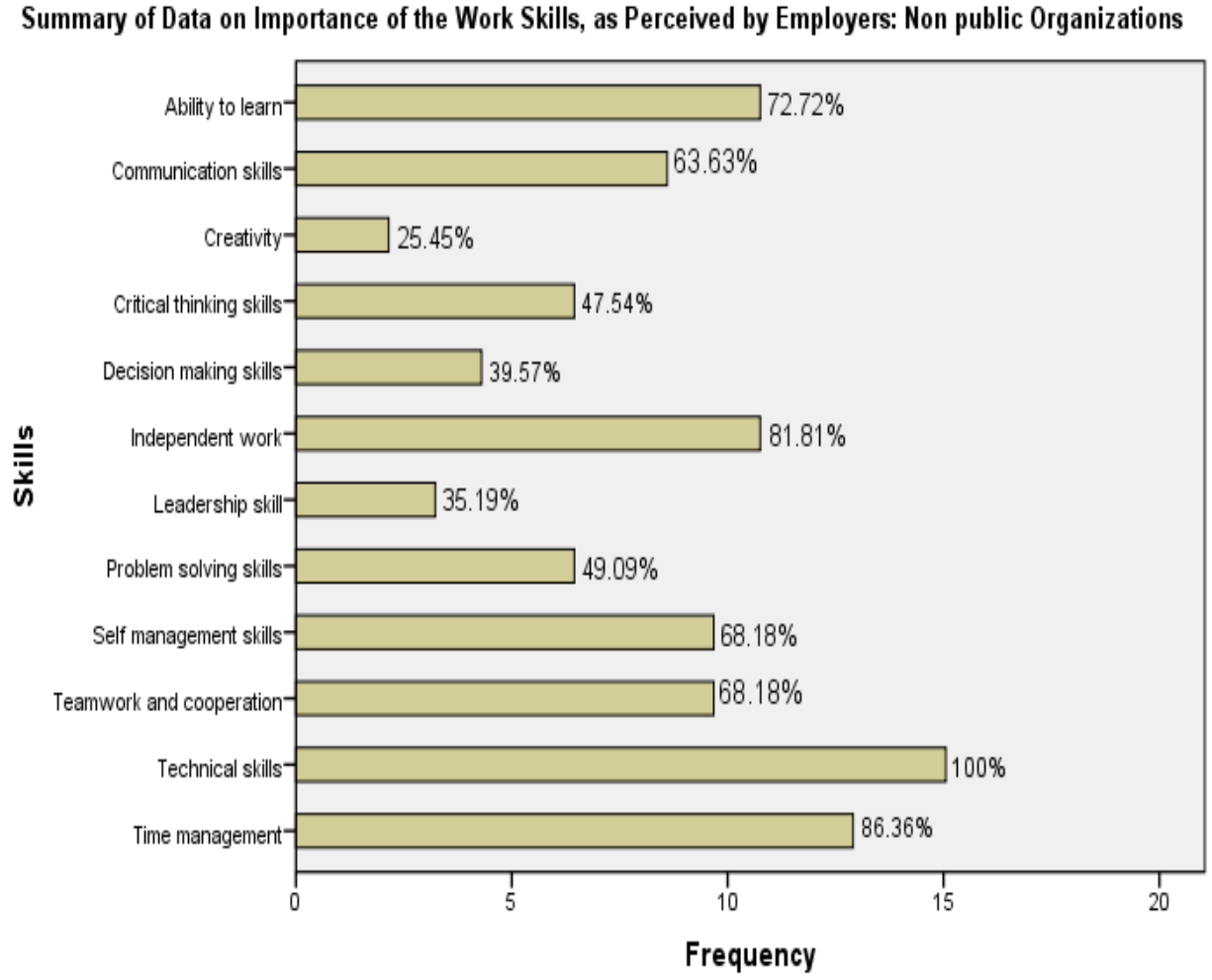

Figure 3: The Level of Importance of Work Skills for Nonpublic Organizations

As can be seen from Figure 3, time management (86.36%), independently completing tasks (81.81%), ability and readiness to learn (72.72%), teamwork and collaboration (68.18%), self management (work ethics, self discipline) (68.18%) and Communication skills (63.63%), are the most important skills for employers and employees must demonstrate to survive in the nonpublic organizations. Problem-solving skills (49.09%), critical thinking skills (47.54%) and decision-making skills (39.57%) took the middle position in the list that shows the skills demand of nonpublic organizations. It was identified that creative thinking skills was accepted by few respondents as they are essential for the benefits of their organizations. The results show that time management (usage) skills, independent work, ability and readiness to learn, teamwork, self-management skills and communication skills are the most essential work skills for employees and for the nonpublic companies. All the respondents agreed that job specific technical skills are among the most important skills for the nonpublic organizations and the skills employees must demonstrate to survive in the companies.

4.3.2 The Skills Demand of Public Organizations

Public sectors are among the destinations of students who are interested to join the world of work immediately after secondary education. As understood from interviews conducted with human resource heads of the different public sectors, the positions occupied by secondary school dropouts or graduates are record office, property sections, cleaner, guard, printing office and messenger. Regarding the skills required from applicants and employees graduating from secondary schools, one of the HR expert reported that teamwork, cooperation, problem-solving skills, communication skills (reading and writing in the local language), work ethics, appropriate usage of work time and self-regulation skills are the key skills his office expects from employees (Gamta, HR sector 1 around Finfine, 20 September, 2021). HR of another office reported,

> *To effectively demonstrate their roles, employees who graduate from high school are required to read and write (local language), independently perform activities based on the timeline of the organization, cooperate with others, solve problems related to their task and respect rule and regulation. Their positions may not frequently require them to demonstrate critical thinking skills, decision-making skills and creativity (Kuma, Human resource head of public sectors 3)*

In addition to the mentioned skills, it was learned that some of the positions taken by employees graduated from secondary school require job-specific technical skills. In response to the question

intended to learn how often employees are expected to employe the intended work skills, it was explained,

> *The number of the skills the different positions in our office attracting secondary school graduates or dropouts is not equal. Similarly, the extent to which employees are required to demonstrate the skills that are identified as essential is not the same. Some of them are expected to be demonstrated always, whereas few are required sometimes or rarely (Bona, HR head, sector 2 around Addis Ababa/Finfine).*

He continued,

> *It is not always for employees to demonstrate critical thinking skills, problem-solving skills and decision-making skills. Communicating with customers and staff members, cooperating and working with others, independently completing activities, respecting and appropriate use of work time, self discipline or work ethics, and readiness and ability to learn are the skills employees need always to effectively demonstrate their responsibilities.*

On the same issue, another informant said,

> *Oral communication with customers and staff members, cooperation and work with others, work independently, time usage, self discipline and work ethics are the skills always required to effectively accomplish their responsibilities. Critical thinking, readiness and ability to learn, problem solving and decision making are the skills employees are required to demonstrate occasionally (Gamta, Human resource head of public sector 1).*

The responses obtained from employees graduated from secondary schools has no significant different with views of employers. In addition to job specific technical skills, employees from different offices confirmed that time management skills, communication skills, teamwork, work ethics (self management) and cooperation and problem-solving are the skills their organizations critically demand from them. Majority of the employees agreed that their responsibilities require critical thinking skills, creativity and decision-making skills occasionally. Employees of business oriented public sector need to posses oral communication skills, work ethics (self control), appropriate time usage, independently completing tasks based on the prearranged timeline, work with other and cooperation, problem-solving skills and technical skills are the skills that are mandatory for employees to survive in the organization (Chala, employee, sector 3 surrounding Addis Ababa/Finfine).

The results show that employees of public organization were effective in job specific skills and communication skills (read and write) using local language (Afan Oromo). In contrast, it was revealed that employees were not ready to learn, and not effective in solving problems, making

evidence based decisions and critical thinking skills. Teamwork, cooperation, self regulation and time management skills are the skills partially demonstrated (HR sector 1, surrounding Addis Ababa/Finfine). Students related factors and reasons that are associated with the schools and its curriculum were mentioned as the major causes for the poor performances of employees graduated from secondary schools. In order to prepare skilled workforce, it was suggested that secondary school curriculum should be relevant to the skills need of the labour market and pedagogical practices of the schools should encourage students to acquire and develop the skills and behaviors required in the world of work (HR, sector 2 surrounding Addis Ababa/Finfine).

Higher education institutions are among the organizations attracting secondary school graduates interested to join the world of work. The facility office and distance and continuous education program section are among the sectors in universities where many secondary school graduates are serving. Regarding the skills the positions require from employees graduating from secondary schools, one among the interviewees stated as follows:

> *Majority of the responsibilities expected from employees working under supervision of the facility coordination office demand employees to use work time appropriately, work and cooperate with others, smoothly communicate with other, respect the organization work ethics and independently complete tasks that do not require job-specific skills (facility expert, Gurmu).*

On the same issue, another employee said,

> *Appropriate use of work time, work independently, teamwork and cooperation, work ethics, self management skills, communication skills (read, write, report), positive attitude towards work and ability to learn and adapt to work environment are the skills our office requires employees to demonstrate (HR of distance education program, Taressa).*

However, summary of the responses obtained from employees working in universities revealed that work independently, time management skills, working with others and collaboration, communication skills, problem-solving skills and decision-making skills are the skills that are crucial to effectively demonstrate their responsibilities. Team/line larders are required to demostrate leadership skills. However, the study depicted that few employees face difficulty to communicate effectively with people they were assigned to serve, to control their emotion (self control) and to solve problems that are expected to be manage to the level of their responsibilities. The problems related to appropriately use (managed) work time and the work habits and work ethics the organization expected from employees were among the skills

identified by employers as they didn't show willingness to demosstrate to the level of the organizations expectations (Facility expert, Gurmu).

Though geographical locations of the public organizations included in the study is different, reactions regarding the skills requirements of the institutions has no significant difference. For instance, responses obtained from the organizations found in Nekemte town, western part of Oromia, Ethiopia providing social service to the people show that employees are required to smoothly communicate each other and with their immediate supervisors, respect work time and solve problems that have direct connection with their responsibilities at individual level or in collaboration with others (Milki, HR expert, sector 1 in Nekemte, 8 december, 2021). In response to the question asked to learn the skills the organization demanding from workforce, experts from another sector concluded as there is no clearly demarcated line between the responsibilities of employees working in one team (Robe, HR sector 3 in Nekemte, 6 December, 2021). That is, employees working in the same group are required to work together and support each other (collaborate). Although human resource officer labeled decision-making skills and creativity as they are required conditionally, employee of the same sector didn't recognize importance of the mentioned skills (Fatuma, Employee in sector 2, in Nekemte). Relevant education plays a great role in equipping young people with the skills prepare them to be effective in the workplaces. However, interviewee who was serving as facility expert said,

> *Few of the workers graduated from secondary school didn't show the expected commitment to use time appropriately, and their readiness to learn and improve their performance and work habits, their willingness to cooperate with others, develop team spirit and self discipline is not interesting (Bira, sector 2, 6 December 2021).*

Concerning the challenges they have been facing in relation to workers performance, observation of another informant from the same organization is stated as follows:

> *The major problems we have been challenged with are associated with employees' personal behavior, self control, ability to communicate with others, the way they mange time and deliver their responsibility, and ability to solve problems. Besides, lack of good work habits and positive attitude towards work are among the behavioral problems employees frequently committed (Guma, HR head, 6 December 2021).*

The results showed that effectiveness of secondary education to prepare students for work and the graduates' readiness and performance in the world of work was not to the required level. The major argument of respondents was focused on the nature of curriculum contents. That is, the curriculum and teaching-learning activities are theory oriented and not relevant to prepare

students for work and for the work environment where many people from different background work together. As a result they concluded that secondary school employees (graduates) were not equipped with the skills employers demanding from them. It was also reported that absence of practical work and the instructional approaches secondary school teachers employed in teaching the lessons did not encourage students to develop the skills needed to effectively demonstrate their responsibilities (Arfase, employee sector 1 in Nekemte, 8 December 2021).

Employers were required to show their views on the extent to which the identified skills are required in their organizations. Figure 4 shows the percentage of respondents who responded high or very high regarding the level of importance of the skills for employees and the public sectors.

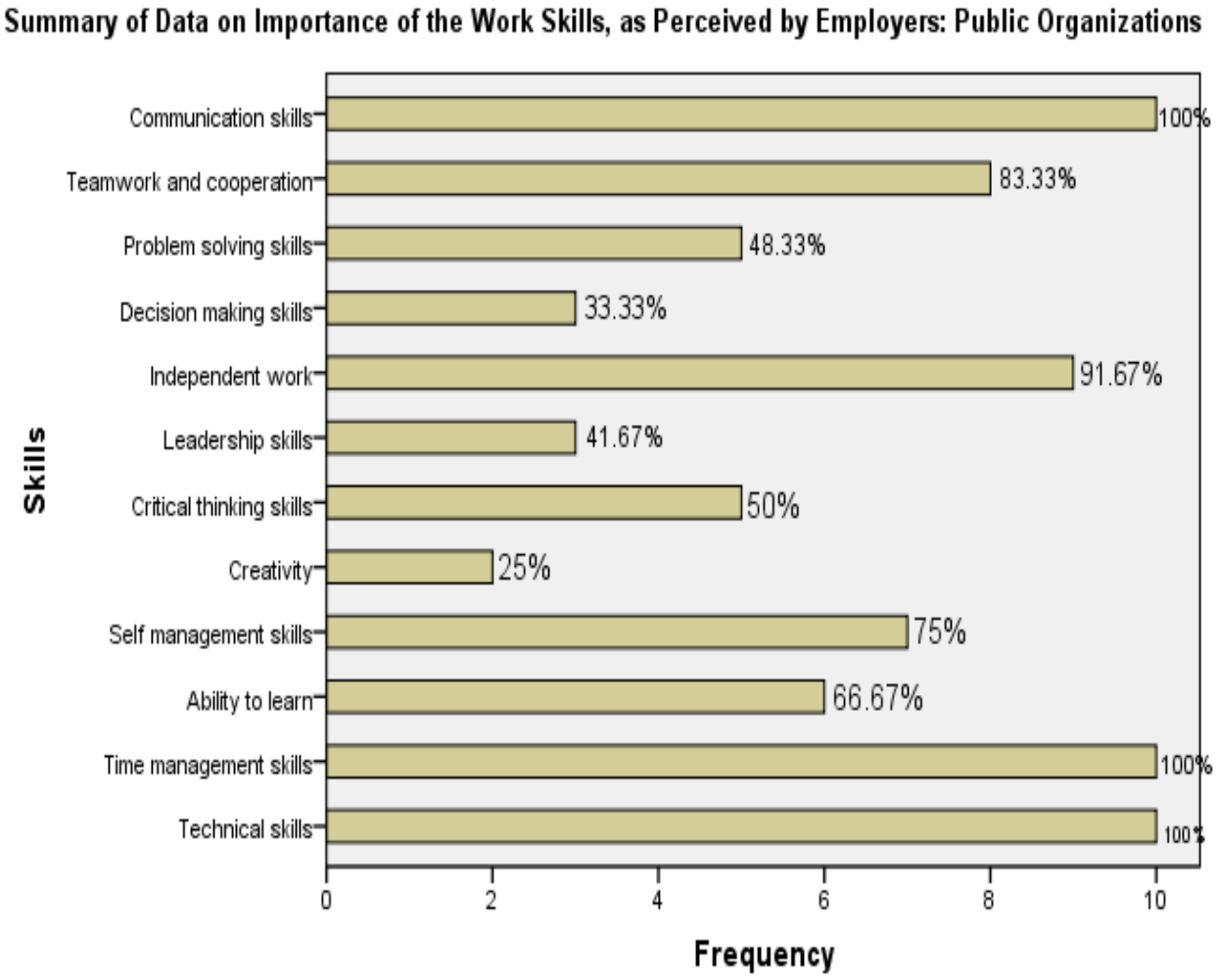

Figure 4: The Level of Importance of Work Skills for public Organizations

Even though the skills in the above list are essential for the benefits of the organizations and for survival of employees, analysis of the responses depicted that they are not equally important for an organization or for employees to demonstrate their responsibilities. As can be seen from Figure 4, it was identified that time management (100%), communication skills (100%), independent work (91.67%), teamwork and cooperation (83.33%), self-management skills (self-discipline) (75%) and readiness to learn (66.67%) are the most important skills the public sectors required from secondary school graduates. About half of the respondents accepted critical thinking skills (50%) and problem-solving skills (48.33%) as they are essential for their sectors. The study revealed that decision-making skills (33.33%) and creativity (25%) are rarely required from the employees in the public organizations. However, all (100 %) of human resource experts or technical managers believed that job specific technical skill is mandatory for employees. Based on these findings, it is concluded that appropriate use of work time, effective communication skills, independently completing work, team work and collaboration and self-discipline are the most important skills for public sectors and secondary school graduates.

Employees in public organizations are also requested to show their observations regarding the level of importance of each skill. Figure 5 shows percentage of employees who believed that the level of importance of the identified skills is high for employees and their respective organizations. As can be seen from Figure 5, time management (89.34%), ability and readiness to learn (84.21%), independent work (78.95%), self management (73.68%), teamwork and collaboration (68.42%) and communication (63.18%) are the six top skills employees must demonstrate while they are doing their job as operator or line/team leader in nonpublic organizations. Among the skills public sectors require from secondary school graduates, employees identified time usage (92.30%), work independently (84.61%), self-management (76.92%) and readiness and ability to learn (76.92%) and teamwork (68.42%) as the five most important skills employers required from the workforce. Though the level of importance of the skills is different, it was identified that time management (usage), independently completing tasks, self-management (self-discipline), ability to learn, communication skills and teamwork are the most important skills both categories of the organizations required from secondary school graduates. In addition to these skills, line/team leaders are required to demonstrate leadership skills. Job specific technical skills are the most essential and equally important for public and

nonpublic organizations. On the other hand, creativity, decision-making skills and critical thinking skills have no considerable importance for both types of organizations.

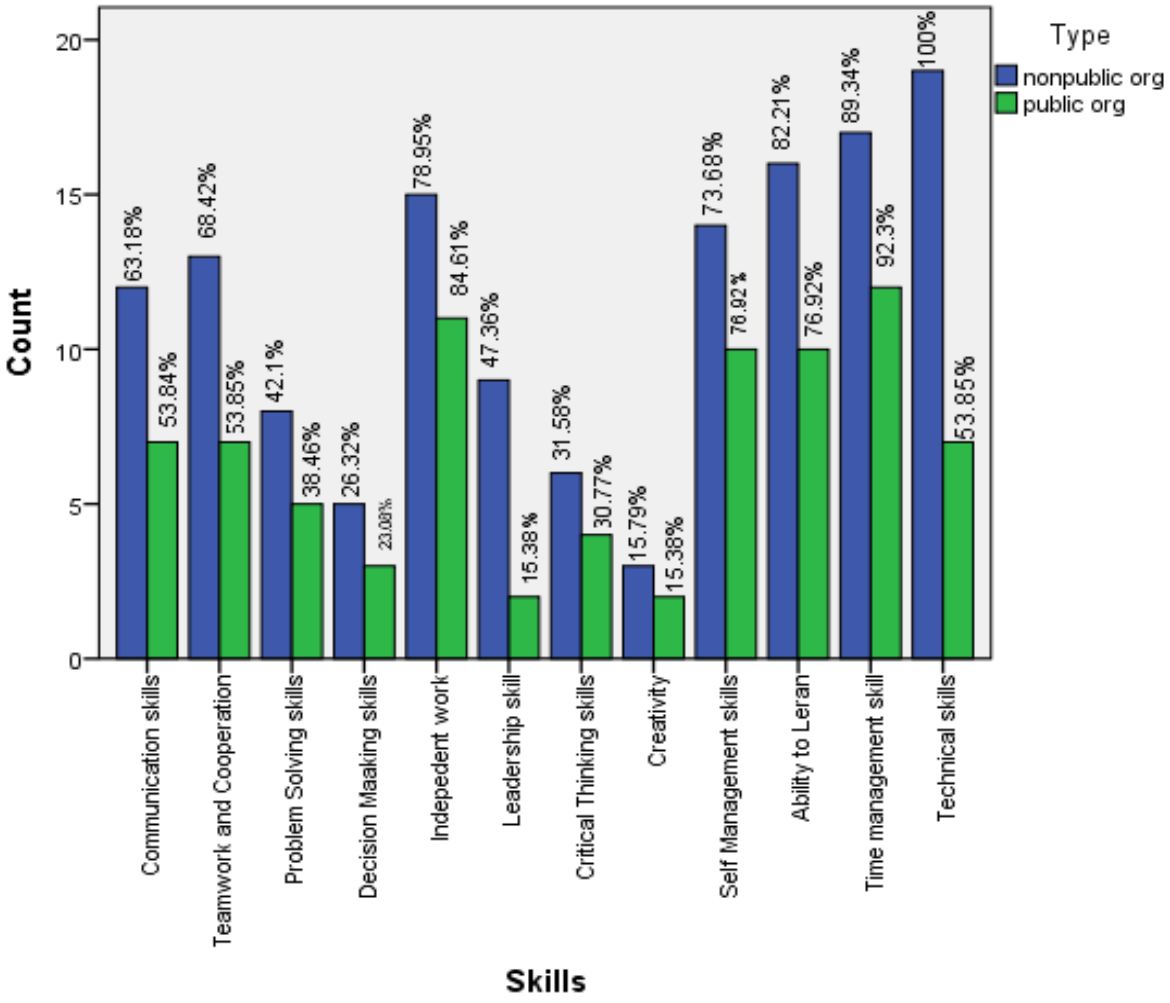

Figure 5: The Level of Importance of Work Skills for Public Sectors and Nonpublic Organizations, as Perceived by Employees

Employees in manufacturing industries reported that problem-solving, critical thinking, creativity and decision-making are the skills rarely required to demonstrate their responsibilities. In the same manner, employees in public organizations argued that creativity, critical thinking skills and decision-making are the skills that have less importance to perform their duties. Besides, employees in nonpublic organizations agreed that none of them acquired the skills help them to demonstrate the technical skills expected from operators; their respective companies provided them pre-service or practical induction training. However, there are no as such complex and difficult technical skills employees in the public sectors required to employ. Similar to the

employers, both groups of respondents named the curriculum and secondary schools as the major reason for the poor performances of employees and the challenges they have encountered.

In addition to data collected through interview, observations were used during visit of the companies and the public sectors to learn the observable skills the organizations require from employees graduated from secondary schools. The results from observation of the work sites showed that there are two major positions assigned to employees graduated from secondary school; team/line leader and operator. It was learned during observations that employees were required to complete tasks independently, communicate effectively with others, respect work time, cooperate and work with others and demonstrate technical skills. Team leaders are required to demonstrate leadership skills and decision-making skills.

To sum up, though the rank given for each skill by different groups of respondents is not the same, the study confirmed that time management (time usage), independent work, ability to learn and adapt, self control (self management), teamwork and collaboration, and communication skills are the competencies the organizations demand from employees. The position of critical thinking skills, problem-solving skills and decision-making skills took the middle ranks in the list of skills required by the public sectors. Creativity is the skill the organizations rarely demand from secondary school graduates. Team coordinators are required to possess leadership skills. In all nonpublic organizations and few public sectors, team leaders are required to possess problem-solving skills and decision-making skills. All the positions that invite secondary school graduates and some of the responsibilities in public sectors demand employees to have job-specific technical skills. Among the skills mentioned as essential for employees and employers, effective way of communication (oral), self management (self control/work ethics), appropriate use of work time, independently accomplishing work, ability to work with others, ability to solve problems and ability to learn (adapt) are the areas of skills employees faced difficulty to demonstrate during the early days of their employment. Some of operators promoted to team leader position faced challenge to exercise their responsibilities that are related to decision-making skills and problem-solving skills. Moreover, it was argued that the association between the skills employees is required to demonstrate in their work environments and what they have learned in their previous secondary schools was not strong. It was also revealed that the instructional strategies employed in the schools didn’t encourage students to develop the skills

help them to be effective in the workplaces. The study uncovered that the schools did not arrange educational tour so that students get firsthand experience. The schools' learning environments do not encourage students to perform activities that enable them to acquire basic technical skills that are essential to develop the skills required in the world of work.

4.4 Relevance of Secondary School Curriculum to the World of Work

This section presents the results of content analysis of secondary school textbooks. The analysis focused on instructional objectives, review activities, exercises and end-of-unit-questions included in grade 9-12 student textbooks. Analysis of data collected through different instruments was conducted to learn how teachers and students observe relevance of the curriculum to the skills demand of the world of work.

4.4.1 Content Analysis on Secondary School Textbooks

Textbooks play an important role as main learning resources for teachers and learners. Brown (2004) believes that a textbook presents contents and activities that can shape what will happen in the classrooms. It is a textbook which helps teachers to prepare the lesson and get a big picture of what they are going to do in the classroom. Besides, Silva (2009) argues that one of the most important for students' future career is interdisciplinary capabilities including communication skills, collaboration, problem-solving skills, critical thinking skills, information management and creativity. These capabilities are not taught in isolation but rather are taught within a core body of subject matter content. In the current study, content analysis was conducted to check to what extent secondary school curriculum responds to the skills demand of the world of work. For that, learning objectives, activities, exercises and end-of-unit-questions included in four subjects textbooks, namely, Biology, Chemistry, Geography and History were analyzed focusing on the identified work skills.

1. Secondary School Chemistry (Published in 2010)

Learning Objectives

The development of thinking skills, more specifically higher order thinking skills, is among the desirable educational goals in science education (Gallagher, Hipkins & Zohar, 2012). Science education that engages students in higher-order thinking includes constructing arguments, asking questions, making comparisons, establishing causal relationships, identifying hidden

assumptions, evaluating and interpreting data, formulating hypotheses and identifying and controlling variables. Moreover, chemistry education gives learners opportunity to develop communication skills (writing and speaking skills), teamwork and collaboration skills, self-management skills, time management skills and independently completing tasks as they conduct experiment and prepare and present laboratory reports. However, majority of the competencies listed in secondary school chemistry textbooks don't encourage the development of the skills the world of work demands from employees. Grade 9 and grade 10 chemistry textbooks have four chapters each. As can be seen from appendix I, in contrast to the expectations from secondary school chemistry education, more than 82% (for each) of the competencies (learning objectives) intended to be attained at grade 9 and grade 10 levels don't reflect higher order thinking skills. This clearly shows that most of the learning objectives are associated with the first three lower-level cognitive domains that don't encourage students to develop the skills the world of work requires from secondary school graduates. The following few are among statements of learning outcomes included in the first units of Chemistry for grade 9 and grade10 reflecting lower order thinking skills that have no significant contribution for the development of the skills required in the workplaces.

Chemistry Grade 9 - unit 1	**Chemistry Grade 10 - unit 1**
• understand the discovery of the electron and the nucleus; • know the terms like atomic number, mass number, atomic mass, isotope, energy level, valence electrons, and electron configuration; • understand the Dalton, Thomson, Rutherford, Bohr & the quantum atomic models; • describe Dalton's atomic theory; • describe modern atomic theory • tell the absolute and relative masses of an electron, a proton, and a neutron; • tell the number of protons and electrons in an atom from the atomic number of the element; • explain the terms atomic mass and isotope, and • tell the number of protons and electrons… • name the five atomic models, • define the term electronic configuration,	• know the historical development of organic chemistry and the classification of organic compounds; • know the general formulas of alkanes, alkenes, alkynes, alcohols, aldehydes, ketones, carboxylic acids and esters; • understand isomerism and know possible isomers of alkanes, alkenes and alkynes; • know the major natural sources of hydrocarbons; • define the term functional group • define hydrocarbons; • define saturated hydrocarbons; • define homologous series; • write the general formula of alkanes; • write the first ten members of alkanes; • define unsaturated hydrocarbons

• tell the block of an element from its electronic configuration • tell the number of groups and periods in the modern periodic table • tell the number of elements in each period	• define alkenes; • define geometric (cis-trans) isomerism • define the term aromatic hydrocarbons • tell the uses of petroleum products • tell the functional group of alcohols

Source: Chemistry for grade 9 and 10 (Published in 2010)

This doesn't mean that all the statements of objectives in the chapters represent lower order thinking skills. For instances, there are 55 statements of objectives in chapter 1 of chemistry for grade 9. Among these, 4 (7.27%) of the competencies are identified as relevant and intended to promote the development of the skills employees graduated from secondary schools needed to become successful in their future workplaces.

- Compare and contrast Dalton's atomic theory with modern atomic theory.
- Develop skills in correlating the electron configuration of elements with the periodicity of the elements, and in predicting the trends of periodic properties of elements in the periodic table
- Demonstrate scientific inquiry skills: observing, inferring, predicting, classifying, comparing and contrasting, making models, communicating, measuring, asking questions, interpreting illustrations, drawing conclusions, applying concepts, and problem solving.
- deduce the properties of an element from its position in the periodic table

The entire statements of objectives listed above mainly reflect critical thinking skills. Among the objectives mentioned above, the third one repeatedly occur throughout all the chapters in the textbook and represents more than four among the skills under investigation including communication skills, problems-solving skills, critical thinking skills, decision-making skills and creative thinking skills. In addition to critical thinking skills, the second statement represents creativity. Thus, critical thinking is the most frequently represented skill in unit 1 of chemistry for grade 9 textbook.

It was confirmed that the composition trend of learning objectives in secondary school chemistry textbooks is similar. For instance, like that of grade 9, the number of objectives associated with the skills need of the world of work was insignificant in grade 10 chemistry textbook. Among 94 learning objectives included in unit 1 of grade 10 chemistry, only 8.51% are identified as having

strong association with the required work skills, namely, critical thinking skills, creativity, problem-solving skills and decision-making skills. The following are the learning objectives in unit 1 of grade 10 chemistry textbook representing some of the skills employers require from secondary school graduates.

- demonstrate scientific inquiry skills: observing, classifying, communicating, measuring, asking questions, interpreting data, drawing conclusions, applying concepts, predicting and problem solving.
- Prepare methane in a laboratory by the decarboxylation method
- Carry out a project to produce biogas from cow dung
- Prepare acetylene in the laboratory by the reaction of CaC2 with water
- Compare and contrast the properties of ethane, ethene and ethyne
- Carry out test-tube reactions with Br2 in CCl4, KMnO4, concentrated H2SO4.
- Perform an experiment to prepare ethanol from sugar
- Carry out an activity to show chemical reactions of alcohols with active metals

Similar to the competencies in chemistry for grade 9 textbook, the first statement of objectives in the list occurs repeatedly throughout all the chapters of grade 10 chemistry, and it seems planned to promote the development of communication skills, problems-solving skills, critical thinking skills, decision-making skills and creative thinking skills(see chemistry for grade 9 and grade 10, unit 1) .

In order to acquire problem-solving skills, students need to apply scientific methods that require them to define a problem clearly, develop testable hypotheses, design and execute experiments, analyze data using appropriate statistical methods, and draw appropriate conclusions. However, the learning objects listed in grade 9 chemistry textbooks seem intended to develop problem-solving skills that demand students' simple mathematical operations and application of formulas clearly discussed in the textbook. The following are some of the objectives designed to promote mathematical problem-solving skills, but require application of the learned formula (source: chemistry for grade 9).

- Develop skills in solving problems based on chemical equations (mass-mass, volume-volume and mass-volume problems) (unit 3)
- Solve mass-mass problems based on the given chemical equation (unit 3)

- Solve volume-volume problems based on the given chemical equation (unit 3)
- Solve mass-volume problems based on the given chemical equation (unit 3)
- Developing skills in solving problems to which the gas laws apply (unit 4)

Practical work can encompass purposeful observations or scientific inquires by manipulating equipment and materials (Hofstein, 2017). Such work is driven by questions, predictions, observations, analyses, and interpretations. There are some unique activities and project work that are compulsory to be part of chemistry education and crucial to develop critical thinking skills, teamwork, communication and problem-solving skills. However, the results of analysis of grade 9 chemistry textbooks revealed that no statement of objective in chapter 1 or chapter 2 is related to the skills expected to be acquired through chemistry education. Chemistry laboratory experiences provide opportunities for team building, inquiry-based learning, hands-on activities, and exposure to standard laboratory equipment and technology. In chemistry, conducting experiments allow students to perform activities individually and in groups that require them to observe, collect data, analyze, interpret results and report results. Besides teamwork and communication skills, laboratory work (experiment) stresses and tends to develop motor and sensory skills, coordination and technical abilities in students. Unlike the first two chapters, it was found that few experiments are included in chapters 3 and 4 of grade 9 chemistry. There are 68 statements of objectives in chapter 3 of chemistry for grade 9. Though the statements are vague and do not show the specific work skills, the following 7(10.29%) statements of objectives have strong association with the skills expected to be acquired through conducting experiments (see unit 3, chemistry grade 9).

- Conduct simple experiment to demonstrate exothermic and endothermic
- Conduct some experiments on combination reactions in groups
- Conduct some experiments on decomposition reactions in group
- Conduct some experiments on simple displacement reactions in groups
- Conduct some experiments on double displacement reactions in groups reactions
- Carry out an experiment to illustrate the relative rate of reactions

In the same vein, among objectives included in chapter 2 of chemistry for grade 10, the following are related with the skills believed to be benefited from doing experiments.

- Conduct experiments to distinguish acidic oxides from basic oxides;

- Conduct an experiment to distinguish peroxides from other oxides
- Perform activities to determine the PH of some common substances using universal indicator or a pH-meter
- Conduct simple experiments to prepare acids in a laboratory;
- Conduct simple experiments to prepare bases in a laboratory
- Conduct simple experiments to prepare a salt by neutralization

The number of statements of objectives representing the skills under consideration is not limited to the list above. However, from the results of the study it is possible to concluded that the number of learning objectives intended to represent the skills the world of work require from employees graduating from secondary schools is insignificant. For instance, among 39 objectives in chapter 2 of chemistry for grade 9, only the following 5 (12.82%) represents communication skills, problem-solving skills, critical thinking skills, teamwork, and creative thinking skills.

- Demonstrate scientific inquiry skills: observing, predicting, making model, communicating, asking questions, measuring, applying concepts, comparing and contrasting, relating cause and effects.
- Investigate the properties of given samples of ionic compounds.
- make models of covalent molecules to show single using sticks and balls or locally available materials
- investigate the properties of given samples of covalent compounds
- compare and contrast the three types of intermolecular forces

Similar, in unit 4 of grade 9 chemistry, the number of objectives intended to reflect the skills under investigation is not important. Among 41 statements of objectives included in chapter 4, only 10 (24.49%) are related to communication skills, problem-solving skills, critical thinking skills and creative thinking skills (see unit 4, chemistry grade 9).

- Carryout experiments to determine the boiling points of liquids and the melting points of solids
- Demonstrate an experiment to show phase changes
- Demonstrate scientific inquiry skills: observing, predicting, comparing, interoperating, applying concepts and making generalizations

- perform an activity to show changes in volume and pressure of gases to illustrates Boyle's law
- perform an activity to show changes in volume and temperature of gases to illustrate Charles' law
- compare the nature of real gases with ideal gases
- carry out an activity to compare the rate of diffusion of two different gases
- carry out an activity to demonstrate the concept of vapor pressure
- carry out an activity to determine the boiling points of water and ethanol
- demonstrate an experiment to show the phase changes from ice to liquid water and then to water vapor

It was identified that, among 27 objectives that are in chapter 3 of chemistry for grade 10, only the following 3 (11.11%) have alliance with some of the skills employers require from secondary school graduates. Among these, the first statement of objective represents more than one skill, namely, communication skills, problem-solving skills, critical thinking skills and creative thinking skills.

- Demonstrate scientific inquiry skills: observing, comparing and contrasting, measuring, asking questions, designing experiment, interpreting data, predicting, classifying, communicating and problem solving.
- Construct a simple galvanic cell, using strips of zinc, copper, $ZnSO_4$ and $CuSO_4$ solutions
- Perform an activity to show the electrolysis of molten electrolytes

The trend is the same in chapter 4 of chemistry for grade 10. Similar to chapter three, the most frequently used terms to describe objectives in this chapter are 'know', 'describe', 'list' and 'understand'. Among sixty statements of objectives in unit 4 of grade 10, only 2 (3.33%) are associated with the skills under consideration. This shows that majority of the competencies were not designed to promote the development of the work skills employers demand from secondary school graduates, rather they encourage lower order thinking skills that have no significant contribution to acquire the skills under consideration. However, the two statements are comprehensive enough to reflect some of the skills expected from secondary school graduates.

- demonstrate scientific inquiry skills such as observing, classifying, communicating, asking questions, applying concepts and problem-solving
- Carry out a project on the effects(s) of an industry on environment.

The number of units in grade 11 and 12 chemistry textbooks is six (in each). It is normal to think that as grade level increases the level of skills expected to be achieved is higher than the lower grade levels. However, the results of the study show that the number of objectives that have relationship with the skills employers demand from secondary school graduates is less represented in chemistry for grade 11 and 12 than that of the lower levels, grade 9 and 10. Hence, it can be concluded that the assumption which says, "As grade level increases importance of incorporating higher order thinking skills that are essential to be effective in the world of work increases" is totally denied. It was learned that, the trend in the distribution of the skills reflected throughout the chapters in the textbooks is similar to the lower grades. That is, majority of the competencies (learning objectives) that are part of chemistry for grade 11 and grade 12 textbooks don't encourage the development of the work skills. The list of statement of objectives in the table below shows that how large the number of objectives representing lower order cognitive skills only in one chapter (unit 1) of both grades, grade 11 and 12. Most of these objectives are related to the first two lower order cognitive skills. Among 33 and 48 objectives included in unit 1 of grade 11 and 12 (respectively), only 6 (18.18%) and 9 (18.75%) have association with few of the skills under investigation. This can be taken as among the indicators that show inadequate integration of the skills that are essential to prepare the future workforce in secondary school chemistry curriculum.

Chemistry Grade 11- unit 1	Chemistry Grade 12- unit 1
• understand the scope of chemistry • understand the causes of uncertainty in measurement • define chemistry • list and describe the seven SI units and their prefixes • write the names and symbols of derived SI units • define decimal places • define significant figures • define scientific method • describe the major steps of the scientific method • describe the procedures of writing laboratory reports	• know the types of solutions; • understand the process of solution formation, the rate of solution, the heat of solution and solubility; • describe the dependence of solubility on the temperature and pressure of the solution • know how to solve problems involving the concentration of solutions and to express the result in various units; • describe, the behavior of ionic solute in unsaturated, saturated and supersaturated solutions using the concept of equilibrium; • understand the relationship between the colligative properties of solutions and know how to solve problems involving colligative properties of solutions • define the terms mixture, homogeneous and heterogeneous mixture, solute, solvent, solution • describe suspensions and colloids. • explain different types of solutions; • give examples for each type of solution;

Source: Chemistry textbook grade 11 and 12

Critical analysis of the competencies listed in all four units of chemistry for grade 11 revealed that the number of objectives that are related to the required work skills is insignificant. However, critical thinking skills and problem-solving skills are (relatively) the most frequently reflected competencies in the textbook. Decision-making skills, communication skills and creativity are moderately represented in the list of the objectives associated with the expected work skills. The skills that are categorized under intrapersonal skills were denied to be part of the list of objectives in chemistry textbook. Among the huge number (273) objectives in all units of grade 11 Chemistry, only the following few are associated with some of the skills the world of work require from secondary school graduates.

- analyze the given data in terms of precision and accuracy - unit 1
- use scientific methods in solving problems – unit 1
- demonstrate some experimental skills in chemistry – unit 1
- demonstrate scientific enquiry skills including observing, inferring, predicting, comparing and contrasting, communicating, analyzing, classifying, applying, theorizing, measuring, asking questions, developing hypotheses, performing and designing

experiments, interpreting data, drawing conclusions, making generalizations and problem solving – unit 1, unit 4, unit 5, unit 6

- correlate the electron configuration of elements with the periodicity of elements – unit 2
- conduct experiments to observe and analyze the physical properties of different substances to determine the type of bonding present – unit 3
- carry an activity to investigate the melting point and solubility of some ionic compounds
- carryout an activity to investigate the effects of heat, electricity and some solvents on covalent compounds – unit 3
- predict the geometrical shapes of some simple molecules – unit 3
- carryout an activity to investigate the conductivity, malleability and ductility of some metals and non-metals – unit 3
- perform an activity to show the effect of the nature of reactants, surface area, concentration, temperature and catalyst on reaction rate – unit 4
- perform an activity to demonstrate the effects of changes in concentration on the position of equilibrium and to determine Kc and Kp values- unit 5
- test for the carboxylic acid and ester functional groups – unit 6
- conduct an experiment to produce acetic acid in the laboratory- unit 6

Similarly, the statements of objectives that are part of chemistry for grade 12 are dominated by the first three lower cognitive domains. However, few competencies confirming importance of problem-solving skills and critical thinking skills for future work and life of secondary school students are included in the textbook. The results from the analysis show that majority of the terms used to write the objectives resembling problem-solving skills demand students to apply mathematical knowledge, techniques, and rules. Although, there exist only one comprehensive statement representing critical thinking skills, problem-solving skills, communication skills and decision-making skills in the list of objectives, critical thinking skills and problem-solving skills are the most frequently observed in the list of competencies included in chemistry for grade 12 textbook. Among these, critical thinking is the more frequently represented skill. Among the large number (297) of objectives in chemistry for grade 12 textbook, the following are some of the statements of objectives that are identified as they are relevant to the skills employers require from employees graduating from secondary school.

- after a visit to nearby gold smith, present a report to class on how jewellery gold is prepared – unit 1
- investigate the effect of temperature on the solubility of sodium sulphate in water – unit 1
- conduct an experiment to determine the solubility of table salt and sugar in water – unit 1
- Compare and contrast change in colligative properties of electrolytic and non electrolytic solution- unit 1
- compare the energy change observed when chemical bonds are formed and broken, and relate these changes to endothermic and exothermic reactions – unit 3
- derive an expression for the enthalpy change of an ideal gas, based on the first law of thermodynamics – unit 3
- predict spontaneity of redox reactions and overall cell potentials by studying a table of half-cell reduction potentials – unit 4
- compare and contrast electrolytic and Galvanic cells – unit 4
- demonstrate scientific enquiry skills: classifying, communicating, asking questions, relating cause and effect and making generalizations – unit 5, unit 6
- analyze the risks and benefits of the development and application of synthetic polymers (example, plastics) and suggest possible methods of control – unit 6

The study revealed that the terms frequently used in most of the statements of objectives are ‘explain’ and ‘describe’. This shows that most of the statements of objectives are related to the first two lower-level cognitive domains. Some argue that if the terms in the statement of objectives are to explain and describe orally or in written form by using their language, to some extent it gives students opportunities to develop communication skills. However, theme of the statements of objectives in which these terms are used is clearly discussed in the text. Hence, it is not safe to conclude that the objectives were planned to promote the higher order thinking skills; they are more related to the first two lower order cognitive skills.

In conclusion, the results of qualitative analysis of objectives in secondary school chemistry textbooks revealed that the number of objectives reflecting the skills most of the employers demand from secondary school graduates is not sufficient. Among the skills expected to be achieved at secondary school level and employers demanding from secondary school graduates,

critical thinking skills is (relatively) well represented in the list of objectives included in secondary school chemistry textbooks. The space provided to teamwork, collaboration, communication skills and intrapersonal skills in the list of learning objectives that are part of secondary school chemistry textbooks is not to the expected level.

Table 5: Summary of Distribution of Domains of Objective in Chemistry Textbooks

Subject	Grade	Cognitive Domain						Affective domain	Psycho-motor domain	Total
		K	C	Ap	An	Syn	Eva			
Chemistry	9	70	53	40	20	7	6	2	3	198
	10	108	65	39	33	9	4	1	3	259
	11	103	93	40	20	4	11	2	2	273
	12	102	123	45	13	9	5	-	2	297

Key: K: Knowledge, C: Comprehension, Ap: Application, An: Analysis, Sy: Synthesis, Ev: Evaluation

As can be seen from Table 5, the competencies (objectives) planned to be achieved at secondary schools through chemistry education are dominated by lower order cognitive domains (knowledge, comprehension and application). 82.32%, 81.85%, 86.45% and 90.90% of the objectives that are part of chemistry for grade 9, 10, 11 and 12 (respectively) are representative of the first three lower cognitive domains. Affective domain and psychomotor domain are equally important to prepare students for work. Unless students develop work habits and the skills help them to use and manipulate different equipments, they will face difficulty to adapt to technological tools and machines in the workplaces. However, the results from analysis of objectives that are part of secondary school chemistry depicted that the competencies that are related to the two domains of learning, affective and psychomotor, are found insignificant. This confirms that the learning objectives in secondary school chemistry textbooks have no significant contribution to acquire and develop higher order cognitive skills, interpersonal skills and intrapersonal skills that are vital to prepare students for work. However, among the skills that are considered as crucial for employment and work, critical thinking skills and problem-solving skills are in a better position than the others. Interpersonal (communication and teamwork) and

intrapersonal skills (self management and time management) are rarely represented in the textbooks or totally ignored by textbook writers.

Review Activities and Exercises and End-of-unit-questions

In chemistry, activities that students need to achieve the expected competences demand experiments, making connections between a finding and related concepts and phenomena, combining and synthesizing ideas into new concepts, and critiquing experimental designs (Webb, 2007). The results of the study revealed that secondary school Chemistry textbooks are rich in activities and experiments with few project works. For instance, there are 82 activities and 19 experiments in Chemistry for grade 9. Critical thinking skills, communication skills, teamwork, problem-solving skills, creativity, decision-making skills and practical skills are the competencies expected to be acquired through doing experiments. However, majority of the activities in chemistry for grade 9 demand students to demonstrate and encourage them to acquire communication skills, teamwork sprit and critical thinking skills. More specifically, 36 (43.9%), 31 (37.8%) and 18(21.95%) of the activities were designed to help students develop communication skills, teamwork and critical thinking skills (respectively). On the other hand, only two activities were prepared to encourage students to develop creative thinking skills. In Chemistry for grade 11 textbook, there are 84 review activities. Among these, 39 (75%), 60 (73.17%) and 33(40.24%) were intended to develop teamwork, communication skills and critical thinking skills (respectively). While 5(6.1%) of the activities were planned to develop decision-making skills, only two and one activities demand creativity and problem-solving skills, respectively. Based on the findings, it is possible to conclude that critical thinking skills, communication skills and teamwork are the top three skills grade 9 and grade 11 students required to possess in doing review activities included in chemistry textbooks. In other words, critical thinking skills, communication skills and teamwork are the most emphasized skills in the textbooks.

The most frequently used instruction presented to guide students to do (review) activities included in secondary school chemistry says, “Form a group and perform the following task and present your findings to the class” (see grade 9 Chemistry 1.2, 1.3, 1.4, 2.1, 2.2….). This shows that group work and presentation are the most emphasized tasks in doing the activities in chemistry textbooks. This implies that teamwork and communication skills are the most

emphasized skills in majority of the activities in chemistry textbooks. Moreover, if the teacher and students collaborate to do the activities as-per the instruction being mentioned, the probability to develop leadership skills, time management skills and self-management skills is also high. Based on these results it is concluded that most of the activities in chemistry textbooks encourage students to develop teamwork and cooperation skills, communication skills, leadership skills and time management skills. However, majority of the activities including the textbook that requested students to complete tasks together and present the results to the class are mainly to promote the first three lower cognitive domains that demand students to recall information and apply the formula being learned or discussed in the textbooks. This doesn't mean that all the activities rejected importance of higher order thinking skills. There are few activities that are designed to facilitate the development of critical thinking skills in addition to the mentioned work skills (evidence; grade 9 chemistry activity 1.6, 1.18, 2.8, 4.6, 4.8, 5.8, 5.11; grade 11 activity: 1.9, 1.10, 2.4, 2.9, 4.5, 4. 10).

Besides, there are experiments that demand learners to prepare or identify samples, collect and analyze information, make conclusions, and report results (see grade 9 chemistry experiment 3.1, 3.2, 4.1; grade 10 activity 1. 2, 1.3, 2.5, 2.6; grade 11 activity 3.1, 3.2, 4.1; and grade 12 activity: 1.2, 1.3). These kinds of learning activities are essential to equip students with critical thinking skills, problem-solving skills, decision-making skills and communication skills. However, creativity and intrapersonal skills didn't get adequate consideration by subject curriculum experts or textbook writers while they were designing framework or identifying activities to be part of secondary school chemistry textbooks. Hence, it is safe to conclude that the critical thinking skills, team work and communication skills are the most emphasized skills in the experiments presented in chemistry textbooks. Problem-solving skill is moderately emphasized in the textbooks. The review activities in chemistry textbooks were rarely associated with decision-making skills, creativity, and interpersonal skills (e.g., self-management).

The number of questions in secondary school Chemistry textbooks is large as compared to the other subjects. For example, there are 214 questions that are compiled under 45 review exercises and five ends-of-unit-questions in Chemistry for grade 9. However, analysis of the exercises and end-of-unit-questions confirmed that only 14 (6.54%) and 4(1.87%) of the questions were aligned with the development of critical thinking skills and problem-solving skills, respectively.

Besides, very few of these were intended to promote the development of communication skills and teamwork. The study depicted that majority, 91.54% of the questions are not associated with and has no significant contribution for the development of the skills that are essential in the world of work and students need to become effective workforce. These findings indicate that most of the questions under exercises and end-of-unit-questions listed in grade 9 Chemistry are associated with the lower order cognitive skills that have insignificant role to develop the skills that essential for employers of secondary school graduates.

Similarly, among the 336 questions presented as exercises and review questions in Chemistry for grade 11, insignificant number of questions were designed to promote critical thinking skills (6), decision making skills (1) and creativity (1). More than 95% of the questions demand students to apply the formulas they have learned previously. Besides, some of the questions demand students to understand and remember concepts they have learned. Thus, it is safe to conclude that the questions don't require or encourage students to use or develop the skills that help them to be successful in the world of work. However, it was found that significant number of experiments that are essential to encourage students to develop communication skills, problem-solving skills (to some extent), critical thinking skills and the basic practical skills are included in the textbook.

Majority of the questions included in secondary school chemistry as exercises (in-text questions) and end-of-unit-questions have strong alignment with simple memorization and comprehension of concepts (contents) discussed in the textbooks. Some of the questions require students to define different chemical concepts, give names to chemical formulas and apply formulas to calculate number of particles (see grade 9 chemistry exercise 1.1 (question number 1), exercise 1.6, review exercise unit 1(question no 1-9), review exercise unit 2 (question no 1-18), and grade 11: exercise 3.1 (question no 2 & 3), exercise 1.2, review exercise unit 1 (question 1- 10), exercise 2.1 (question 1 & 2, and etc). However, considerable number of questions in chemistry for grade 9 require students to use critical thinking skill (Evidences; see grade 9 chemistry exercise 1.1 (question number 2), exercise 2.1(question no 2), and Exercise 2.1(question no 4 & 5), exercise 2.5 (question no 4 & 5), exercise 3.4(question no 2 & 3), exercise 3.8 (question no 3 and etc). AS grade level increases the skills expected to be learned become higher and more comprehensive. In contrast, the questions listed in chemistry for grade 11 textbook as exercises and end-of-unit-questions do not promote and have no significant alignment with the skills the

world of work expecting from secondary school graduates. Among the huge number questions presented in grade 11 chemistry textbook, the number questions that demand critical thinking skills and problem-solving skills don't exceed 10. Moreover, the number of question that are essential for the development of higher order thinking skills is less than 10% of the total questions included in the textbooks. This confirms that the contribution of the exercises and end-of-unit-questions in the textbooks to equip students with the skills required in the world of work and to prepare them for the world of work is insignificant.

In conclusion, it was confirmed that the extent to which learning objectives, activities, exercises and end-of-unit-questions associated with and/or contribute to the development of the work skills was not equal. Majority of the spaces provided for the skills the world of work demanding from employees graduating from secondary schools in learning objectives (competencies), review exercises and end-of-unit-questions that are part of secondary school chemistry was narrow. That is, the learning objectives (competences) and review questions in chemistry textbooks promote the lower-level cognitive skills. However, some of the activities and all of the experiments and project works included in the textbooks were intended to open opportunities for students to develop some of the skills required at workplaces. Critical thinking skills, communication skills, teamwork and problem-solving skills are relatively the most emphasized skills in secondary school chemistry textbooks. Besides, experiments presented in the textbooks designed to allow students to develop basic technical skills and experiences required in the organization inviting secondary school graduates. Creativity and intrapersonal skills are almost denied to be part of the curriculum experiences included in the textbooks. Decision-making skills are rarely reflected in the textbooks.

2. Secondary School Biology (Published in 2010)

Learning Objectives (Competencies)

Academic content must be the means by which we teach core competencies rather than through merely memorizing (and often forgetting) academic content (Wagner, 2008). Biology as an experimental science involves critical thinking skills, reasoning and problem-solving skills in everyday life (MoE, 2009). Biology for grade 9 - 12 contains 6, 5, 5, and 4 chapters respectively. Critical analysis of the learning objectives included under all chapters of secondary school Biology textbooks revealed that majority (87.19%) of the competencies seems prepared to

encourage students to develop the lower order cognitive skills. The results of the study depicted that very few among the large number of learning objectives in the textbooks were designed to show importance of critical thinking skills and problem-solving skills. This confirms that the learning objectives that are identified as relevant to the skills employers demanding from employees aren't adequate as compared to the total number of learning objectives incorporated in secondary school Biology textbooks.

There are 119 learning objectives in grade 9 Biology textbook. Among these, only 12 (10.08%) were identified as they have significant contribution for the development of the skills students require to be employed or effective in the world of work. The results of analysis of the six chapters showed that none of the skills that are recognized as essential to prepare students for work is reflected in unit 1, 5 and 6 of grade 9 Biology textbook. In other words, the indicated percentages of objectives that are relevant to the skills required in the world of work are part of only three chapters (unit 2, 3 and 4). These statements of objectives are associated with critical thinking skills, problem-solving skills, decision-making skills and communication skills (to some extent). Critical thinking is the most emphasized skill. The following are the statements of objectives the study recognized as they have alignment with the skills required in the world of work. As shown in the list, the key term 'life skills' used in the last statement of objectives represents range of skills, namely, teamwork, problem-solving skills, self-control, and decision-making skills.

- Compare the different resolutions and dimensions of light and electron microscopes- unit 2
- Use the microscope to study cells – unit 2
- Compare the way materials are prepared for the electron microscope and the light microscope- unit- 2
- Demonstrate diffusion experimentally- unit 2
- Demonstrate osmosis experimentally – unit 2
- Carry out laboratory tests to identify different nutrient groups in a food sample – unit 3
- Analyze a local diet and if necessary, suggest ways in which it might be improved to become more balanced- unit 3
- Examine the structure of a lung from an animal such as a cow or sheep- unit 3
- Examine a mammalian heart using fresh or preserved specimens – unit 3

- Distinguish between disinfectants, antiseptics and antibiotics – unit 4
- Demonstrate methods of giving care and support to people living with HIV/AIDS (PLWHA) and ways of overcoming discrimination – unit 4
- Demonstrate the life skills such as assertiveness, decision making and problem solving to help prevent the spread of HIV/AIDS – unit 4

The results of analysis of Biology for grade 9 textbook revealed that 91% of the competencies are highly aligned with the lower order cognitive skills. For instance, among objectives included in only one chapter (unit 3), the number objectives reflecting lower order thinking skills exceeds the number of objectives reflecting higher order thinking skills or the expected work skills included throughout the textbook (in all the six chapters). The following are some of the statements of objectives that are not relevant with the skills employers require from secondary school graduates.

- List the main sources of some of the vitamins and minerals needed by the human body.
- List the major nutrients needed by the human body and their sources.
- Define nutrition and malnutrition and describe the effects of malnutrition
- Describe the functions of the structures of the human digestive system.
- Define enzymes and describe their role in the process of digestion.
- Describe the structure of the teeth and explain their importance.
- Describe the processes of digestion in the mouth, stomach and small intestine.
- Describe the structure and functions of the human respiratory system.
- List the factors which affect breathing and explain how they affect it.
- List the methods of maintaining the hygiene of breathing
- Describe the steps followed during artificial respiration and be able to demonstrate these steps.
- Define and compare aerobic and anaerobic respiration, and explain their importance in cells.
- List the three types of blood vessels.

As said earlier, it is natural to expect that the number and worth of the skills to be learned at upper grade level exceeds that of the lower grade. However, the results show that the number of higher order thinking skills or the skills the world of work requires from employees integrated in

grade 10 Biology textbook is less than that of grade 9. Moreover, the number of statements representing the skills required in the world of work is lower that the number objectives having insignificant association with the skills graduates need to become successful workforce. In the same manner, the results from analysis of the textbook confirmed that the extent of appearance of the work skills in Biology for grade 10 textbooks is insignificant as compared to the number of objectives listed in the textbook. Among 104 statements of objectives that are part of grade 10 Biology textbook, only the following (3.85%) have strong relation with the skills that employers expect from secondary school graduates.

- Conduct an experiment to prove that the actual taste of food is a mixture of taste and smell (unit 3)
- Demonstrate life skills that will help you prevent the spread of HIV/AIDS (unit 3)
- Demonstrate the importance of light, chlorophyll and carbon dioxide (CO2) for photosynthesis with simple experiments (unit 4)
- Summarize the general methods of conserving biodiversity (unit 5)

The first and the third objectives in the above list are expected to be achieved through experimentation. Conducting experiment gives students opportunity to develop critical thinking skills, decision-making skills, communication skills and teamwork. Though the term 'life skills' which is part of the second statement of objectives in the above list represents interpersonal skills, intrapersonal skills and cognitive skills, the specified objective has strong link with decision-making skills, problem-solving skills, self-control and communication skills. The last statement of objective is highly related to critical thinking skills. Terms like 'explain' and 'describe' are frequently used in the statements of objectives. Though the terms seem to represent oral or written communication skills, the major intent of the objectives is to encourage students to remember and understand the concepts discussed in the textbooks.

There are 76 and 118 learning objectives that are organized under five units in each grade 11 and grade 12 Biology textbooks. Among these, only 9 (11.84%) and 11(9.32%) competencies (respectively) are associated with the skills employers require from employees. The results of the content analysis showed that the mentioned number of objectives have strong alignment with decision-making skills, problem-solving skills, self-control, critical thinking skills, creativity, and communication skills. Majority of these learning objectives reflect critical thinking skills.

Self-control and creativity are the rarely represented skills in the list of objectives in grade 11 and 12 Biology textbooks. From these results, one can conclude that majority of the learning objectives in Biology for garade11 and grade 12 have no significant contribution for the development of the skills students need for the work environment they anticipate immediately after completion of secondary education. Among the objectives in grade 11 and 12 textbooks, only the following objectives have agreement with the skills employers require from secondary school graduates.

Grade 11	Grade 12
• Demonstrate scientific methods by narrating how Louis Pasteur and Alexander Fleming used the scientific method to solve problems (unit 1). • Write a report for a scientific experiment (unit 1) • Identify biologically important compounds by conducting simple food tests(unit 2) • Conduct an experiment to show the specificity of an enzyme (unit 3). • Investigate the destruction of an enzyme by heat(unit 3) • Show how temperature, pH, substrate concentration and enzyme concentration affect enzyme activity (unit 3) • Compare the Davson–Danielli and fluid mosaic models (unit 4) • Conduct an experiment to show movement of solvent through a semi-permeable membrane (unit 4) • Distinguish between C3 and C4 plants and give at least three examples of each (unit 5).	• Compare infectious disease with functional disease and state the germ theory (unit 1). • Compare viruses with free-living cells (unit1 • Demonstrate the life skills that lead to responsible sexual behavior (unit 1). • Reflect a concern towards biodiversity and the need for its conservation (unit 2). • Compare and contrast arithmetic and exponential growth (unit 2) • Compare intra-specific and inter-specific competition. (unit 2) • Interpret a population growth rate curve. (unit 2) • Construct a model of DNA showing the base pair between complementary (unit 3) • Compare some of the different theories that seek to explain the origin of life on Earth, … (unit4) • Describe and compare some of the different theories that seek to explain the origin of life on Earth (unit 4) • Compare these two theories. (unit 4)

Source: Biology Textbook grade 11 and 12

Cognitive, affective (interpersonal) and psychomotor domains of competences are equally important in the world of work. Table 6 shows distribution of the three domains of competencies in secondary school Biology textbooks.

Table 6: Summary of Distribution of Domains of objective in Biology Textbooks

Subject	Grade	Cognitive Domain						Affective domain	Psycho-motor domain	Total
		K	C	Ap	An	Syn	Eva			
Biology	9	42	55	8	10	1	3	-	-	119
	10	33	41	13	5	2	-	-	-	94
	11	22	27	8	6	3	2	8	-	76
	12	54	40	7	7	3	1	6	-	118

Key: K: Knowledge, C: Comprehension, Ap: Application, An: Analysis, Sy: Synthesis, Ev: Evaluation

As can be seen from Table 7, 37.1%, 40.05%, and 8.85% of objectives in grade 9-12 Biology textbooks are representatives of the first three lower order cognitive skills (respectively). Among these, 77.15% is covered by the first two cognitive domains. Only 10.56% objectives reflecting the last three higher-level cognitive domains are relevant with the skills required in the world of work. The result of the statistical analysis also shows that insignificant number of the objectives that are part of grade 9-12 Biology textbooks promote higher order thinking skills and have weak relation with the skills the world of work demand from secondary school graduates. Attitude and psycho-motor skills have equal contribution for employees' effectiveness at workplace. However, the representations of these two domains in secondary school Biology are below the expectations of employers. The results from analysis revealed that among the objectives that are part of grade 11 and 12 Biology textbooks, very insignificant number of competencies are representatives of attitudes that help them develop self control or self management skill (intrapersonal skills). Psychomotor domain is totally denied to be part of the learning objectives.

Review Activities and Exercises and End-of-unit-questions

The teaching-learning process of Biology demands participatory approaches such as learning through investigation, laboratory activities, field visit, ICT and life skills activities (MoE, 2009). The result of analysis of secondary school Biology textbooks showed that majority of the activities promotes the development of lower order thinking domains that have no considerable contribution for the development of the work skills. Among the 58 activities included in Biology for grade 10 student textbook (as learning experiences), the representation of communication skills, critical thinking skills, decision-making skills, teamwork and problem-solving skills is 15 (25.86%), 14 (24.14%), 6 (10.34%), 5(8.62%) and 4(6.7%), respectively. This doesn't mean that

one statement of objective exclusively reflects a single skill; some objectives represent more than one competence. Similarly, among 66 activities included in Biology for grade 12 textbook only 17(25.76%), 14 (21.21%), 12(18.18%), and 5(7.58%) were designed to promote critical thinking skills, teamwork, communication skills, and problem-solving skills, respectively. Some of the activities presented in the textbooks require students to do activities in small groups (group work). "Work together and present the results of your discussions to the class" is the most frequently stated instruction for the students in doing the activities. However, coordinating or leading the group is the unwritten responsibilities expected to be demonstrated during group work/discussion. Hence, it is possible to conclude that the number of activities designed to encourage students to develop leadership skills and time management is equal to that of team work/spirit and communication skills. Self management is also the skill students need to effectively work with others.

The study revealed that some of the activities included in secondary school Biology textbooks demand memorization of content knowledge and understanding of the concepts clearly discussed in the textbooks (see, grade 10 Biology, activity 3. 14 & 3. 15; grade 11 Biology activity 1.9, 2.2). This doesn't mean that all the activities do not require the skills beyond lower-level cognitive skills. There are activities that require students to do experiments that demand them to observe, collect, analysis and interpret data and making conclusions (see grade 9 Biology, activity 2.8, 2.9, 3.2; grade 10: 3.11, 3.13; grade 12: activity 2.12, 3.1). Moreover, the textbook writers tried to encourage students to do activities in groups and present their opinion to others. (For instance, grade 10 activity 1.3 and 3.19; grade 11 activity 1.15, 1.18. 1.21 and 2.14; grade 12 activity 1.2, 1.7 and 2.4). Based on these results, it is possible to conclude that most of the activities in secondary school Biology textbooks encourage the development teamwork and communication skills. Besides, considerable number of activities requires critical thinking skills, problem-solving skills and decision-making skills (see grade 10: activity 1.3, 2.8, 4.4; grade 12: activity 1.7, 1.8, 1.15, 2.9, 3.2, 3.7,). In contrast to the nature of curriculum contents in secondary school Biology, decision-making skills, self-regulation (self control and time management) and creativity are the skills that are rarely represented in the list of activities. To this end, it is possible to conclude that majority of the activities require and promote the development of

communication skills, teamwork and critical thinking skills. Critical thinking skill is the most emphasized and required skill to do activities included in secondary school Biology textbooks.

The number of questions included as review exercises and end-of-unit-questions in each Biology textbook is not less than 100. There are 231 questions that are listed under 21 review exercises and five ends-of-unit-questions in Biology for grade 12. The study identified that majority of these questions demand students to remember what they have learned or presented in the textbook. Similarly, the number of questions that students can easily get their answers through simple reading of the contents discussed in the textbooks is almost equal to the questions that demand recalling and memorization. That is, most of the questions in Biology for grade 12 encourage students to develop the first three lower-level thinking skills that have no significant contribution to develop the work skills. The questions that demand students critical thinking skills and problem-solving skills or decision-making skills are only 14 (6.06%) and 4(1.73%), respectively (see end-of-unit-questions: unit 1 Q. no 1; unit 3 Q. no 5, 6, 7, & 8; unit 4 Q. no 1, 3, 4, 7 & 10; unit 5 Q no 3 & 4). Among the skills secondary school students require for work, critical thinking skills is the most considered skills in secondary school Biology textbook.

There are 137 questions (review questions and end-of-unit-exercises) presented under five chapters and 24 review exercises in grade 10 Biology textbook. Among these, the study revealed that majority (95%) of review questions and end-of-unit-questions in secondary school Biology textbooks don't require students to apply the skills they will need to become successful in the world of work. Most of the questions focus on asking information which is already discussed in the textbooks. In order to develop the higher order skills that are essential to be effective in work environments, the questions students asked should incorporate open ended questions. However, the result of analysis confirmed that the questions included in the textbooks require memorization and understanding of the facts discussed in the textbooks. It was identified that review questions that are very few in number require students to use critical thinking skills (example; Exercise 3.3 Q. no 6, Exercise 5.2 Q. no 2). To this end, it is possible to conclude that most of the questions at the end of sub-topics and end of units require the lower cognitive skills that have insignificant contributions to prepare studs for work.

In conclusion, most of the instructional objectives (competences) included in Biology textbooks have no strong association with the skills graduates require for work; they are more related to the

lower level cognitive skills. It is also identified that representation of affective domain and psychomotor domain of competencies is below the expectation of the employers. Consequently, it is safe to conclude that majority of the learning objectives that are part of secondary school Biology textbooks are not associated with the skills required to prepare students for work. However, self control, critical thinking skills, problem-solving skills, decision-making skills and communication skills are represented by few statements of objectives. Critical thinking skill is the most emphasized in the different parts of the textbooks. Similarly, the questions that are expected to be answered by students do not require students to use and encourage them to develop the skills the world of work demand from secondary school graduates. Most of the questions encourage students to recall or understand the contents or concepts discussed in the textbooks. However, insignificant number of questions requires students to employ critical thinking skills. Some of the activities included in the textbooks encourage students to develop critical thinking skills, communication skills, teamwork skills, decision-making skills and problem-solving skills. To sum up, critical thinking skills, communication skills, teamwork and collaboration and problem-solving skills are (relatively) the emphasized skills in secondary school Biology textbooks. Among the three units of analysis, the representation of the skills under consideration is better in review activities than in objectives and exercises and end-of-unit-questions.

3. Secondary School Geography (Published in 2011)

Learning Objectives (Competencies)

The fundamental goal of teaching social studies in secondary schools is to help students become responsible, critical, reflective, and active citizens who can make informed and reasoned decisions and critically evaluate other's positions and perspectives. There are four chapters in Geography for grade 9 and grade 10 textbooks (each). The results from analysis of the objectives showed that majority of the competencies listed in grade 9 and grade 10 Geography textbooks require memorization, understanding concepts and application of the given formulas. Among the large number (110) of competencies listed under all chapters of Geography for grade 9, only 29 (26.36%) are related to the skills the world of work expect from secondary school graduates. The following are some of the statements of objectives that are relevant to the skills identified as essential for work.

- analyze the internal and external forces that change the surface of the earth and relate them to the resulting landforms (unit 2)
- analyze the association between elements and controls of climate and interpret climate data (unit-2)
- assess the concept, components, interdependence and, the factors that affect the distribution and features of ecosystems (unit 2)
- analyze the position of the sun at various latitudes at noon time of Dec. 22/ June 21 (unit 2)
- compare & contrast the condition of rainfall & temperature between places of coastal & interior areas (unit 2)
- analyze the concept of region and regional study (unit- 2)
- interpret wind speed and direction from wind gradient map (unit 2)
- assess the major characteristics of the temperate zone and sub-regions (unit 2)
- develop the skills of measuring and recording atmospheric pressure (unit 3)
- examine how economic activities modify and transform resources (unit 3)
- reflect upon the impact of HIV/AIDS in Ethiopia (unit 4)
- decide to join the school anti-HIV/AIDS club to alleviate the prevalence of HIV/AIDS in Ethiopia (unit 4)

As can be seen from the list above, majority of the statements of objectives are associated with critical thinking skills, decision-making skills, communication skills, problem-solving skills and creativity. Among these, critical thinking skill is the most represented skill in the list of objectives included in geography for grade 9 textbook.

One among the purpose of geography education is to develop problem-solving skill, creativity, collaboration and skills in obtaining data and information, communicate and implement, and foster attitudes. However, the skills intended to be acquired through learning the subject are not adequately addressed in the list of objectives. Among the 95 statements of objectives included in grade 10 Geography textbook, the following few, only 20 (21.05%) are confirmed as they reflect the skills employees need for work and the higher order cognitive skills.

- Compare the climate classifications of the Greeks' and that of Koppen (unit-2)
- compare rainfall distribution of Ethiopia by place & time(uni- 2)

- review the concept of an ecosystem (unit-2)
- Compare the population trend between Africa and Europe (unit-3)
- Interpret population pyramids of developed and developing countries (unit 3)
- Compare level of urbanization at continental level (unit 3)
- Compare the present population size of Ethiopia with the past (unit-3)
- Analyze the population structure of Ethiopia (unit 3)
- Compare and contrast the types of economic systems (unit 4)
- compare and contrast the advantages and disadvantages of globalization (unit 4)

The key terms, "compare" and "analyze" are repeatedly appear in the statements of objectives. As a result, majority of the statements in the list are related to critical thinking skills, decision-making skills and problem-solving skills. Critical thinking is the most emphasized skill in Geography for grade 10 textbook. The number of learning objectives that are listed only in chapters 1 or 2 of grade 9 or grade 10 promoting recalling of information and comprehension of the concepts discussed in the textbooks exceeds the number of objectives in all chapters that have association with the skills employers require from secondary schools graduates. The following are among objectives included only in unit 1 of grade 9 and 10 that have no significant connection with the work skills expected from secondary school graduates.

Geography grade 9, unit 1	Geography grade 10, unit 1
• recognize the concept • express the meaning • define the term geography; • describe the development of geography as a discipline; • identify the branches of geography; • Identify the characteristics that make the subject of geography a science • explain the meaning of a map • state the basic uses of maps • list the landforms formed by each internal force • explain the types and characteristics of agents of erosion	• Understand the different ways of representing relief on maps • Explain the use of magnetic compass; • Define geographic grid system • Define what the national grid system means • describe methods of showing relief on maps; • define the term contour lines; • discuss the properties of contour lines; • explain the term slope • describe the term gradient of slope; • express gradient in different ways; • Understand the origin of the earth and its tectonic movements.

• state the meaning of weathering • explain the types and characteristics of agents of erosion • explain weather and climate	• describe the concept of continental drift theory • state drought coping mechanism in agriculture

Source: Geography textbook grade 9 and 10

The study revealed that the trend of the skills composition in Geography for grade 11 and 12 is similar to that of grade 9 and 10. That is, the domination of lower order cognitive domain with few objectives that are relevant to the skills expected to be achieved through Geography education including higher order cognitive skills, interpersonal skills and intrapersonal skills is confirmed in the two upper grade geography textbooks. 92 statements of objectives are listed in Geography for grade 11 textbook. Among these, only 27 (29.34%) of the objectives reflect the skills required in the world of work. The following are the competencies that are relevant to the skills expected from employees graduated from secondary schools.

- justify the merit and demerit of approaches used to study physical and human environments – unit 1
- compare and contrast the concept of determinism with possibilism – unit 1
- review the definition and properties of contour lines- unit 2
- assess the differences among watershed, river catchment area, drainage patterns and river capture using topographic (contour) maps- unit 2
- analyze the socio-economic and geo-political similarities of each region- unit 3
- compare and contrast the different climatic regions of Africa- unit 3
- analyze the hydro-politics of the Nile River- unit 3
- analyze soil problems and measures of conservation in Africa- unit 3
- analyze the extent of migration and level of migration in Africa- unit 4
- asses the present features of African socio-economic development- unit 4
- distinguish indicators of development and analyze the challenges and prospects of African economic development- unit 4
- analyze the economic growth and development trend of Africa- unit 4
- predict the socio-economic challenges and prospects of Africa based on the organized data – unit 4

From the above list one can understand that few of the skills under consideration are reflected in the statements of objectives. The objectives have connection with critical thinking skills, decision-making skills and creative thinking skills. Among these, critical thinking is the most frequently represented skill.

Imparting basic knowledge and developing skills for analyzing spatial distribution and interpreting geographical facts and concepts is among the aims of high school geography education (MoE, 2009). In contrast, the nature of competencies listed under all the five chapters of Geography for grade12 is similar to that of grade 11. 80 objectives are included in grade 12 Geography textbook. Among these, only 27(33.75%) is have alignment with the skills required in the world of work or the higher-level cognitive skills. The following are some the objectives in grade 12 geography textbook that are relevant to the identified work skills.

- conduct action research on selected problems- unit
- Analyze the meaning, significance, properties and classification of map projections-unit2
- Translate different data into distribution maps using different diagrammatic methods- unit 2
- compare and contrast the properties of globes and maps-unit 2
- relate formation of soils of Ethiopia with geological events of the past-unit 3
- discuss population theories, trends, growth, structure, spatial distribution and factors affecting population distribution in Ethiopia-unit 4
- analyze the population theories of Malthusian and anti-Malthusian-unit 4
- analyze the impact of rapid population growth on Ethiopia's socio-economic and environmental conditions-unit 4
- analyze the challenges and prospects of socio-economic development for Ethiopia-unit 5
- analyze indicators of development in the Ethiopian context-unit 5
- discuss population theories, trends, growth, structure, spatial distribution and factors affecting population distribution in Ethiopia
- discuss the rate of urbanization and its regional variation in Ethiopia

The results from the content analysis show that 'analysis', 'synthesis' and 'evaluation' are the most frequently used terms in the statements of the objectives. This confirms that critical thinking is the most emphasized skill in upper secondary (grade 11 and 12) Geography education. The statements of objectives that have connection with problem-solving skills,

communication skills and decision-making skills are few in number. It was also revealed that more than 70% of the learning objectives in grade 11 and 12 Geography textbooks are representatives of the skills that have no strong relation with the skills required in the labour market. The following few are taken as examples among the large number of objectives included in the textbooks that have no strong relationship with the skills that are essential for employers attracting secondary school graduates.

Grade 11	Grade 12
• understand the meaning and basic concept of geography –unit 1 • state the meaning of geography-unit 1 • explain the types of settlements- unit 2 • explain turning points in the development of GIS-unit 2 • state the use of GIS;-unit 2 • understand the locational and geological aspects of Africa-unit 3 • recognize the climatic characteristics of Africa-unit 3 • know the characteristics of the drainage patterns and other water resources of Africa-unit 3 • describe the regional division of Africa-unit 3 • describe the seasonal temperature conditions of Africa-unit 3 • explain the seasonal distribution of rainfall in Africa;-unit 3 • describe the concept of economic growth and development –unit 4 • state the actual mineral extraction methods of Africa- unit 4	• understand the significance of research and its nature in geography- unit 1 • know different approaches used in geographic research- unit 1 • explain the concept of research- unit 1 • recognize meanings, uses, conventional signs and symbols and distribution of topographic maps- unit 2 • define topographic maps – unit 2 • Identify the uses of topographic maps-unit 2 • define map projection- unit 2 • identify the properties of map projection-unit 2 • define what a sketch map is- unit 2 • explain the purpose of drawing sketch maps- unit 2 • describe the location and size of countries in the Horn of Africa;- unit 3 • recognize the geological history, structure and relief of the Horn of Africa- unit 3 • state factors affecting population distribution in Ethiopia- unit 4

Source: Geography textbook grade 11 and 12

In summary, the result of qualitative content analysis of secondary school Geography textbooks confirmed that majority of statements of objectives have no significant contribution for the development of the skills employers require from secondary school graduates. Critical thinking skill is the most emphasized skill in all chapters of secondary school Geography textbooks. Problem-solving skills, decision-making skills and communication skills are rarely represented in the list of objectives.

Table 7: Summary of Distribution of domains of objective in Geography Textbooks

Subject	Grade	Cognitive Domain						Affective Domain	Psycho-motor	Total
		K	C	Ap	An	Syn	Eva			
Geography	9	39	33	9	15	1	11	1	1	110
	10	23	38	19	13	-	1	1	5	95
	11	13	41	7	13	3	11	4	-	92
	12	15	29	5	15	6	-	8	1	80

Key: K: Knowledge, C: Comprehension, Ap: Application, An: Analysis, Sy: Synthesis, Ev: Evaluation

The results show that the emphasis given to interpersonal skills (attitudes) and technical skills (psycho motor) in Geography textbooks, especially in geography for grade 11 and 12 textbooks is better as compared to the other subjects. In other words, the status of affective domain (interpersonal skills) and psycho motor domain in Geography is better than in the others. Similarly, the result of analysis of the textbooks confirmed that the percentage of learning objectives representing the work skills the world of work require from secondary school graduates is better in Geography than the other subjects. This does not mean that the required skills are adequately reflected in the statements of the objectives. The number of objectives reflecting the skills employers expects from secondary school graduates and lower order thinking skills is incomparable. Only 23.71% of the competencies included in secondary school Geography textbooks are representative of the skills employees require for work. Among these, decision-making skills, problem-solving skills and communication skills are the most emphasized skills next to the most considered skill, critical thinking skills.

Review Activities and Exercises and End-of-unit-questions

The concern of secondary school geography is to encourage students to collect, analyze, evaluate, and present data/information so that they develop the skills that are essential to become effective in the world of work. The study revealed that most of the activities in the geography textbooks require students to possess lower order thinking skills and encourage them to develop the skills that have less contribution to become effective workforce. It was also revealed that few activities in the textbooks are intended to motivate students acquire the expected skills. The study identified that decision-making skills, critical thinking skills, problem-solving skills, communication skills, teamwork and cooperation, time management and work habits are the

skills some of the activities in Geography for grade 10 textbook intended to encourage students develop using the contents as a vehicle. Regarding frequency count of the skills, the study revealed that 23 (37.7 %), 18 (29.61%), 15(24.59%) and 12(19.67%) of the activities included in Geography for grade 10 textbook are associated with teamwork, critical thinking skills, communication skills and problem-solving skills. The percentage for each skill does not show a one-to-one relationship between the skill and the activities; some of the activities require students to apply and develop more than one skill. Decision-making skills (8.19%), work habit (4.91%) and time management (1.64%) are (relatively) the less emphasis skills in the textbook. The number of activities designed to promote the development of the skills students require for work is incomparable with the activities that have no significant contribution to prepare students for work. Among the total activities included in geography for grade 12, only 53 review activities were intended to encourage students develop communication skills (45.28%), teamwork (43.39%), critical thinking skills (28.3%), problem-solving skills (11.32%), decision-making skills (5.66%) and creativity (3.77%).

As discussed earlier, most of the activities in Geography textbooks do not promote the work skills the labour market expecting from secondary school graduates. However, there are activities in the textbooks planned to encourage students develop the required work skills. For instance, activity 1.8, 1.9, 2.7, 2.8, 2.11 and 4.6 in geography grade 10 textbook and activity 1.3, 3.8, 3.11, 3.12, 4.1, 4.2, 5.4 and 5.5 in grade 12 are intended to develop critical thinking skills and problem-solving skills. Majority of the activities that are identified as they are designed to facilitate the development of critical thinking skills and problem-solving skills also demand students to work with others (teamwork and cooperation), to make group discussions and presentations and to prepare reports. Activity 2.7 and 2.8 (grade 10) and activity 3.8, 3.11 and 4.23 (grade 12) are among the activities designed to help students get firsthand experience and critical thinking skills. Thus, critical thinking skills, problem-solving skills, decision-making skills, teamwork and cooperation, and communication skills are the skills emphasized by review activities included in secondary school geography textbooks. Moreover, few of the activities encourage students to develop creativity and time management skills.

In Geography for grade 10 and 12 textbooks, 119 and 139 questions (respectively) are presented as review questions and end-of-unit-questions. Critical analysis of geography for grade 10

textbooks revealed that more than 90% of the review questions that are listed at the end of each chapter do not require students to use and develop the skills required in the world of work. Majority of the questions that are listed as review exercise in grade 10 and grade 12 Geography textbook are designed to promote memorization, understanding of the contents discussed in the texts and application of the previously learned formula. For instance, among the questions in grade 12 Geography textbook, only 2.88% and 2.16% are intended to encourage the development of critical thinking skills and teamwork, respectively.

The typically open-ended questions which do not have clear and well-defined answers provide students opportunities to develop critical-thinking skills. However, exercises and end-of-unit-questions in secondary school Geography textbooks is dominated by multiple choice and true/false questions that require student to remember or short answer that demand understanding of the easily accessible information in the texts to give answers without examining and using higher-level thinking skills (evidence; grade 9; page 7, 8, 37, 38, 39…..). Among the expected skills, critical thinking is the rarely addressed skills in the review questions included in the textbooks (see; grade 11 page 23; grade 12 page 27). Besides, few of the questions in Geography for grade 12 as exercises and end-of-unit-questions promote critical thinking skills, teamwork, creativity and problem-solving skills (see; unit 1, review question number 10, 11 & 12; unit 2 review question number 16; exercise 5.2, question number 3, 4 and 9). This implies that the skills secondary school students need for future workplace are not adequately addressed in the textbooks.

In conclusion, in contrast to the expectation of the curriculum framework and the requirements of employers, the number of learning objectives, end-of-unit-questions and exercises included in secondary school Geography textbooks are not adequate to promote the skills secondary school graduates need to be employed and survive in the world of work. Critical thinking skills, decision-making skills, problem-solving skills and communication skills are the skills slightly addressed in learning objectives. Critical thinking skills, communication skills, problem-solving skills and teamwork are the skills few questions in the textbooks require from students. However, considerable number of the activities in the textbooks demands students to apply and encourage them to develop critical thinking skills, communication skills and teamwork skills. Very few activities demand students to use and encourage them to develop problem-solving

skills and decision- making skills. Critical thinking skill is the most emphasized skill in the three units of analysis (objective, activities and exercise and end-of-unit-questions).

4. Secondary School History (Published in 2013)

Learning Objectives (Competencies)

The primary goal of teaching social studies is to create citizens who use critical thinking, reflective thinking, and creativity in their daily tasks and make informed and reasonable decisions (Yilmaz, 2009). History is a subject concerned with attitudes and values and provides an emotional and aesthetic experience. History for grade 9 and grade 10 has eight units each. In contrast to other subjects, the results show that specific objectives are not identified for the sub-topics in secondary school History textbooks. Unit objectives are the only list of objectives observed on the first pages from which each units starts in the textbooks. The objectives listed for each unit in grade 9 and 10 textbooks is three to eight in number. The total number of objectives included in grade 9 and 10 textbooks is 41 and 43, respectively. The study revealed that less than forty percent (39% and 30% respectively) of these are relevant to the work skills employers require from the secondary school graduates. Critical thinking skill is the most frequently represented skills in the statements of objectives that have agreement with the competencies required in the world of work. The number of learning objectives representing communication skills and decision-making skills is insignificant. The following are statements of objectives reflecting communication skills, decision- making skills and critical thinking skills (Source: History for grade 9).

- Analyze state formation – unit 1
- Analyze the interrelations of the nations, nationalities, and peoples of Ethiopia- unit 1
- Analyze the conditions leading to the rice and spread of Christianity- unit 2
- Analyze the historical conditions that led to the origin of Islam and the rise of Muslim Arab empire, and also identify the features of Muslim civilization- unit 2
- Examine social, economic and political conditions in the Ethiopian region- unit 3
- Develop the ability to analyze cause and effect relations in historical study- unit 3
- Analyze the consequences of the Oromo population movement – unit 5
- Asses the significant part played by Oromo's in the historical developments in the Ethiopian region and the horn of Africa since in the sixteenth century- unit 5

- Outline the inter-connections and inter-relations among various peoples and states of the Ethiopian region, and those of the rest of the horn of Africa – unit 6
- Analyze the features of liberal democratic revolutions in England, the American colonies and France- unit 8
- Evaluate the gradual development of democracy- unit 8
- Analyze social, economic and political developments in the Napoleonic Empire- unit 8

Almost equal number to that of grade 9 statement of objective reflecting the skills under question are included in grade 10 History textbook. Problem-solving skills, decision-making skills and communication are the skills addressed in the statements of objectives in the textbook. 'Analyze' and 'examine' are the key terms frequently used in the statements of objectives identified as relevant to the work skills. The study revealed that most of the statements represent critical thinking skills. The following are among the competencies associated with the skills under investigation including problem-solving skills, decision-making skills and communication (Source: History grade 10 textbook).

- Analyze the causes and consequence of the civil war in the united states of America- unit 1
- Analyze the development of industrial capitalism in Europe, and show it paved the way for colonial rivalries, conflict and scramble for Africa- unit 1
- Analyze the interaction among the peoples and states of the Ethiopian region connected with the long distance trade- unit 2
- Examine the sequences of the incorporation of the different Nations, Nationalities and peoples in the Ethiopia region- unit 2
- Analyze the causes, nature and consequences of the internal power struggle and political instability of the Ethiopian state- unit 3
- Examine the reasons behind foreign interventions- unit 3
- Discuss the causes, course, and consequences of the first world war and describe its effects on colonial Africa- unit 4
- Analyze the formation of the UNO; and its successes and failures- unit 6
- Compare the different form of anti-colonial struggle in the different part of Africa- U 7
- Examine the impact foreign domination of Britain and USA on Ethiopia in the early decades of the post –war period- unit 8

- Examine the factors for the rise of a military dictatorship and internal and external factors that hastened its downfall- unit 8

The results of the study showed that majority of the statements of objectives in grades 9 and 10 History textbook were intended to encourage students develop the skills that have no connection with demands of employers. Among the objectives included in History for grade 9 and grade 10 textbooks, the statements that are not relevant to the skills requirement of employers are 61% and 70% (respectively). The following are few of the objectives reflecting none of the skills required in the world of work.

Grade 9	Grade10
• Explain the objective and methods of studying history- unit 1 • Describe the process of human evolution- unit 1 • Describe the major characteristic of the reformation- unit 4 • Explain the basic cause of the conflicts between the Christian kingdom and the sultanate of Adal- unit 5 • Describe the Oromo social, economic and political institutions … unit 5 • Explain the attempts to use the catholic religion to serve political ends- unit 6 • Explain factors for the isolation of the Christian kingdom of Ethiopia from Europe until the nineteenth century- unit 6 • List the advantages of the establishment of a permanent capital at gonder- unit 6 • Describe the main political, economic, social and cultural organization… unit 6 • Explain the major economic, cultural, social and political developments in the pre-colonial period- unit 7	• Explain how Italians and Germans managed to form united national states… –unit 1 • Describe the sequence of the industrial revolution… unit 6 • Explain the attempts made at the restoration of the power of the central government after the political instability of the zemene mesafint- unit 2 • Explain the different internal and external challenges to the central government during the reign of emperors Tewodros II and Yohannis IV- unit 2 • Explain the social economic and political factors behind the territorial expansions of Menilik II…. Unit 2 • Describe the main features of the emerging autocracy – unit 3 • Explain the exemplary role of the Ethiopian struggle against colonialism in the 19th century- unit 4 • Explain the restoration of autocracy-unit 5 • Explain the origin of the cold war and its character- unit6

Source: History textbook grade 9 and grade 10

The results from the analysis indicated that, the lower-level thinking skills, particularly, the first two are the most frequently represented cognitive skills. Psychomotor domain and affective

domain of competencies that are assumed as essential to develop technical skills and positive attitudes towards work were denied by textbook writers to be part of the learning objectives. From the results, it is concluded that most of the objectives of the chapters in History textbooks were prepared not to equip students with the skills employers demand from secondary school graduates.

The goal of teaching social studies is not only to help students critically evaluate information but also develop informed decision-making skills needed in life outside the classroom wall (Yilmaz, 2009). The results of analysis of grade 11 History textbook showed that the percentage of objectives reflecting the required work skills (57.14%) exceeds the number of lower order thinking skills (42.86%) that have no considerable contribution to the development of the skills under consideration. However, it was revealed that most of the objectives that are identified as relevant to the required skills promote the development of critical thinking skills. Decision-making skills and communication skills are among the fairly represented skills. The study identified the following statements of objectives that have strong alignment with the required work skills.

- Gain skills in the collection of historical data and use of sources of history – unit 1
- Analyze the process in the development of early human beings as they progressed from food gathering to more advanced ways of life- unit 2
- Analyze the nature of early states and civilization- unit 3
- Compare and contrast the different ancient civilizations including the Ethiopian region and the Horn of Africa- unit 3
- Analyze the effects of trade in the medieval society- unit 4
- Analyze continuity of historical developments in the region after the 12^{th} century- unit 5

The composition of objectives in the last six chapters (chapter 6-11) of History for grade 11 is the same as that of the first five units. “Compare and contrast”, “analyze and examine” are the key terms frequently used in the statements of objectives (competencies) listed in the mentioned units. Though majority of the statements of objectives are associated with critical thinking skills, the study revealed that there are learning objectives reflecting decision-making skills and communication skills. The following are some of the objectives representing decision-making and critical thinking skills.

- Analyze the historical conditions that led to the transition from the middle age to the modern – unit 6
- Examine the nature of the changes during the transformation period from medieval to modern period- unit 6
- Compare the peoples and states in the southern and central regions of Ethiopia- unit 7
- Examine the cause of the war between the sultanate of Adal and the central High lands Christian kingdom – unit 8
- Analyze the traditional Oromo social and political organizations and practices- unit 8
- Analyze the attempts to catholicize the Christian highland kingdom- unit 9
- Examine the socio-economic and political developments in the Christian highland kingdom during the Zement Mesafint – unit 9
- Examine the main features of liberal democratic revolutions in England – unit 10
- Analyze the main aspects of the Industrial revolution – unit 10
- Analyze the causes and results of the Trans-Atlantic slave trade – unit 11

Besides, among statements of objective in History for grade 11 textbook, the following are associated with communication skills.

- Discuss the cause and result of crusade – unit 4
- Discuss the origins as well as socio economic and political development of the Gondarine period- unit 9
- Discuss the democratic ideas which motivated the English, American and French revolutions – unit 10
- Discuss the feature of African states and civilizations that had existence prior to the advent of European colonialism – unit11

In contrast to grade 11 textbook, the results from analysis of History for grade 12 revealed that most of the learning objectives are strongly associated with the first two lower-level cognitive domains: knowledge and comprehension (see Appendix I). There are 67 statements of objectives in History for grade 12. Majority of the objectives are about the facts and past histories students need to know; they are not stated in the ways they reflect the skills employers require from secondary school graduates. Hence, the competences seem to encourage students to recall the learned facts and the concepts presented in the textbook. For instance, among the four learning

outcomes included in unit 1 of grade 12, 3 (75%) statements of objectives are associated with the lower-level thinking skills that have insignificant contribution to the development of the skills employees need to survival in the world of work.

- Mention the various states and people found south and south west of Abay River
- Point out the different autonomous states that existed in Ethiopian region, until the end of19th century or before the formation of modern Ethiopian empire
- Explain the importance of long distance trade in the economy of the Ethiopian region

However, few of the learning objectives are relevant to the expected work skills including critical thinking skills and communication skills. The following are among the few competencies intended to encourage the development critical thinking skills.

- Analyze the cause and course and consequence the civil war in USA- unit 2
- Analyze the method and policy used in as well as the process of the building of the modern Ethiopian Empire- unit – unit 3
- Analyze the causes of the 1935 Italian aggression against Ethiopia – unit 5
- Analyze the interplay of internal and external forces in the course of Italian aggression against Ethiopia and also the liberation of the latter – unit 5

The following are among the competences in grade 12 History textbook reflecting communication skills.

- Discuss the political crises that the ruling circles of Ethiopia faced in the first few decades of the 20^{th} century – unit 3
- Elaborate as how governments with expansionist and aggressive policies drove the whole world to another world- unit 6
- Discuss the emergence of the two antagonistic super- power ; i.e the USA and the USSR, in the world- unit 7
- Discuss the nature of socialist military dictatorship and triumph of opposition forces- unit 8

In summary, the study identified that critical thinking skills, communication skills and decision-making are (relatively) the most emphasized skills in objectives that are part of secondary school History textbooks.

Table 8: Summary of Distribution of domains of objective in History Textbooks

Subject	Grade	Cognitive Domain						Affective Domain	Psycho-motor Domain	Total
		K	C	Ap	An	Syn	Eva			
History	9	10	12	2	11	2	3	1	-	41
	10	6	24	-	12	1	-	-	-	43
	11	4	10	1	12	4	4	-	-	35
	12	16	31	5	9	-	-	6	-	67

Key: K: Knowledge, C: Comprehension, Ap: Application, An: Analysis, Sy: Synthesis, Ev: Evaluation

History education is aimed at providing the necessary skills that help students to practice the scientific method by asking questions, analyzing causal links and applying a critical use of sources and other methods of gathering knowledge about the past (MoE, 2009). It implies that secondary school History curriculum is intended to promote the development of higher order thinking skills. As can be seen from the textbooks and Table 8, 39%, 30%, 57.14% and 13.43% of the competencies (objectives) included in grade 9-12 History textbooks (respectively) are representatives of the skills the world of work demand from the workforce. The result of analysis confirmed that, as compared to the others, considerable number of objectives included in History textbooks were intended to promote the work skills employers expect from secondary school graduates. However, the most important emphasis was given to critical thinking skills with small number of objectives designed to encourage the achievement of decision-making skills, communication skills and problem-solving skills. Hence, it is possible to conclude that subject curriculum experts and/or textbook writers forgot/ignored the importance of majority of the skills employers require from the workforce including teamwork, cooperation, creativity and time management skills and intrapersonal skills.

Review Activities and Exercises and End-of-unit-questions

The number of review activities in secondary school History textbooks is insignificant as compared to the other subjects. The findings obtained from analysis of the textbooks identified that a single activity is not included in unit 4 and unit 6 of grade 9 and in all units of grade 11 History textbooks. History for grade 9 textbook contains eight chapters with 54 activities holding 130 questions. As can be seen from the Appendix J and Appendix K, majority of the activities in secondary school History textbooks encourage recalling previously learned contents and demand

understandings of the issues discussed in the textbooks (see; grade 9 pages 5, 8, 29, 30, 32, 33, …; grade 11 pages 2, 29, 30, 31, 32, 58, 146, 147, 162, 164…). Among the activities in grade 9 History textbooks, only 16.15%, 4.61% and 0.77% of the activities promote critical thinking skills, teamwork (group work) and decision-making skills, respectively. However, there are few activities designed to help students to think critically and discuss with others (see; grade 9 Pages 10, 18, 40, 54, 61…; grade 11 Pages 36, 40, 54, 62…). Creativity, problem-solving skills, time management and self regulation are among the ignored skills. On the other hand, critical thinking skill is the most represented skill in activities included in History textbooks.

It is common to see that the same textbook writers as well as editors participated in designing and preparing one subject for grade 9-12 student textbook. Consequently, the nature of learning experiences or instructional objectives in secondary school History textbooks (grade 9-12) is similar. There are 144 questions under eight review exercises in grade 9 History textbook. Among these, 95.14% (137) of the questions do not encourage students to develop the work skills. Only few questions were intended to encourage the development of critical thinking skills and problem-solving skills. Among the 307 questions organized under eleven review questions and 43 exercises in grade 11 History textbook, only 55 (17.91%), 19 (6.19%), 2(0.65%) and 1(0.32%) were planned to promote communication skills, critical thinking skills, problem-solving skills and decision-making skills, respectively. Thus, communication skills and critical thinking skills are more emphasized in the activities than the others.

Similar to other subjects, most of the review questions included in secondary school History textbooks encourage students to remember and understand previously learned concepts (see; grade 9 textbook pages 3, 26, 55, 74-75, 96-97, 140-141, 157-158,…..; grade 11 pages 7, 9, 45, 80-81,105…). However, some of the review questions require students to work in group and share their understandings to others so that they could develop teamwork spirit and communication skills (see; grade 11 page 1, 47, 49, …). Besides, there are questions that demand critical thinking skills and problem-solving skills (see; grade 9 Page 10, 18, 22, 54, 61; grade 11 Page 9, 28, 101, 167, 239…). Majority of the questions that are part of review exercises and end-of-unit-questions promote the development of critical thinking skills, teamwork, communication skills and problem-solving skills.

As indicated in section 4.3, the study revealed that time management skills, independent work, ability and readiness to learn, teamwork and collaboration, communication skill, and self management (work ethics, self discipline) skills are the top six skills employees must demonstrate to survive in the world of work. However, most of the learning objectives, activities and exercises and end-of-units-questions included in the textbooks do not encourage students to develop the skills employers require the workforces. The representation of the three domain of learning was not proportional; majority of the three categories of analysis were dominated by lower-level cognitive domains. The results obtained through content analysis of the textbooks also revealed that critical thinking is the most integrated skill in secondary school curriculum. However, critical thinking skill is not among the most important skills for employers of secondary school graduates. Though problem-solving, teamwork and communication skills are relatively better represented in the textbooks, their representation is insignificant as compared to the expectation of the world of work. The study revealed that the skills are not equally addressed in the different subject textbooks or in the three units of analysis: objectives, activities and exercises and end-of-units-questions. Intrapersonal and interpersonal were the most ignored skills by curriculum experts or textbook writers during preparation of secondary school curriculum. Among the three units of analysis, the required work skills are more emphasized in (review) activities included in secondary school textbooks.

4.4.2 Relevance of Secondary School Curriculum: Teachers and Students Perspectives

Teachers and students were asked to show their observations regarding the extent to which the work skills employers expect from secondary school graduates are integrated in secondary school curriculum. Learning objectives, activities, and exercises and end-of-unit-questions are the units of analysis used to learn respondents' understanding on the extent to which the work skills that are recognized as essential for employees to survive and to be effective in public sectors and nonpublic organizations are addressed in the curriculum.

Providing students with different skills sets is essential to prepare students for work and give them the opportunity to be successful in the workplace. Cognitive, interpersonal and intrapersonal are the domain of competencies required in most of the organizations attracting secondary school graduates. In order to help students develop these skills, secondary school

textbooks should designed in the way they provide opportunity to ask questions, analyze, evaluate and summarize information, and use the acquired knowledge and skills. As can be seen from Table 9, respondents agreed that the position of secondary school curriculum with regard to its relevance to the cognitive skills employers require from employees graduating from secondary school was medium (mean=3.10). The results from content analysis also confirmed that the mentioned skills are not adequately integrated in the textbooks.

The theme of curriculum relevance focuses not only on cognitive development and achievement of subject matter content and intellectual development of their pupils, but also the interpersonal domain and intrapersonal domain of competencies are as important as cognitive skills to prepare students for the world of work. Communication, teamwork and cooperation are the most frequently needed interpersonal skills. The mean value, 3.02 which is obtained from respondents in response to the question asked to learn the extent to which secondary school curriculum encourage students to acquire interpersonal skills required in the world of work indicates that relevance of the curriculum doesn't exceeds the intermediate position. The mean score for interpersonal skills (2.72) is below the average mean value. Hence, one can conclude that the intrapersonal skills (independent work, self disciple, time management) weren't integrated in secondary school curriculum to the level it prepares students for work. The data from content analysis also confirmed that both domains of competencies, interpersonal and intrapersonal competencies, weren't adequately represented in the textbooks. The results of analysis of the textbooks and questionnaire data revealed that intrapersonal domain of competency is the most ignored area among the competencies required in the world of work. This doesn't mean that all the specific skills categorized under each domain are equally addressed or ignored in different subjects and grade levels. The detail is discussed under content analysis. As can be seen from Table 9, among the three domains of competencies, the number of objectives categorized under attitude/affective domain is not worth to mention. This implies, the attention given to the three domains of competencies in secondary school curriculum was not proportional, and hence it is possible to conclude that considerable room wasn't given to intrapersonal skills.

Table 9: Teachers' and Students' Response on Relevance of Curriculum

No	Secondary school curriculum	M (T)	M (S)	Agg.M	SD
1	encourages students to develop cognitive work skills	3.17	3.03	3.10	1.18
2	provides students with interpersonal skills that are essential to be effective- in the world of work	3.07	2.97	3.02	1.14
3	enables students develop intrapersonal skills	2.66	2.78	2.72	1.17
4	equally emphasis given to both theoretical knowledge and practical skills	2.63	2.75	2.69	1.20
5	encourages students to develop work habits and positive attitudes that are essential in the workplace	3.25	3.41	3.33	0.97
6	Activities in the textbooks promote the development of the skills that are essential in the world of work	3.69	3.71	3.70	1.02
7	Exercises & end-of-unit-questions in encourage students to acquire the skills prepare them for work	3.40	3.40	3.40	1.16
8	Objectives included in the textbooks reflect the skills employers require from workforce	3.34	2.92	3.10	.97
9	Objectives listed in the textbook promote the development of higher order thinking skills	3.57	3.57	3.57	.97

Note. M (T) = mean for teachers, M(S) = mean for students, Expected mean = 3.00

As can bee seen from Table 9, item 4 is designed to identify if theoretical knowledge and practical skills are equally emphasized in secondary school curriculum. The aggregated mean value (2.69) confirmed that practical skills and theoretical knowledge aren't equally represented in secondary school textbooks. In consistent with this result, it was learned from content analysis that majority of the exercises and end-of-unit-questions and some of activities focus on encouraging students to acquire theoretical knowledge than the practical skills. From these results it is possible to infer that the space given to practical skills in secondary school textbooks was not adequate. However, the results from content analysis depicted that considerable numbers of activities and practical works that are essential to equip students with the work skills are included in Chemistry and Biology textbooks.

Providing education which promotes positive work habits and high regard for workmanship is one among the aims of education. The ways schools and the curriculum train students' mind determines the nature of attitudes and habits student develop towards work, work environment, and time management. Item 5 was intended to uncover the extent to which secondary school

curriculum encourages students to develop the work habits and attitudes that are essential to be effective in the workplace. The results from the study showed that the textbooks to some extent (mean=3.33) encourages students to develop the work habits and attitudes the work environment require from employees. On the other hand, the results from analysis of the textbook revealed that the learning experiences and the way they are presented in the textbooks don't reflect the work habits and attitudes employees require to be effective in the world of work. The findings obtained through content analysis and questionnaire revealed that secondary school curriculum contents are not sufficient to equip students with the values they need to become successful in the world of work.

Among many learning materials, a textbook is the only learning material often used by teachers in the classrooms. Textbooks present content and activities that can shape what happen in the classroom. Based on this understanding, teachers and student were asked to show their observations regarding the extent to which activities in the curriculum (textbooks) promote the development of the skills that are essential in the world of work. The responses from both groups of respondents, the grand mean value (mean=3.70), shows that most of the activities were planned to encourage the development the skills under investigation. The findings obtained from content analysis also confirmed that some of the activities in the textbooks were designed to encourage students develop some of the work skills the labour market demand from applicants or the workplaces expect from employees. This does not recognize the position of the different skills in the different subject textbooks or within the same subject across different grade levels is the same. Among the domains of competencies expected to be part of the review activities, critical thinking skills, communication skills and teamwork are the most emphasized skills. In response to the question asked to learn if secondary school textbooks encourage students to acquire the skills prepare them for work, respondents agreed (3.40) that the work skills are fairly reflected in the form review exercises and end-of-unit-questions to be answered by students. However, it was identified through contents analysis that majority of the exercises and end-of-unit-questions require students to develop the first three lower order cognitive domains that have insignificant role in developing the skills students need to be effective in the work environment they will join immediately after graduation. That is to say, the questions listed under review exercises and ends of the units were designed to encourage students to memorize or remember

what they have learned and to comprehend the concepts discussed in the textbooks. In other words, review exercises or end-of-unit-questions included in secondary school textbooks don't allow students to develop the skills prepare them for work.

The response from curriculum experts confirmed that the actual practice of curriculum development process in Ethiopia resembles objective model. In objective model the contents and learning experiences are selected and organized in the way they realize the identified objectives. The statements of the learning objectives represents the knowledge, skills and attitudes students will achieve at the end units or lessons. Teachers were requested to show their level of agreement or disagreement with item number 7 which says, "objectives (unit and sub-topics objectives) included in the textbooks reflect the skills employers require from workforce". Respondents agreed that the objectives included in secondary school textbooks don't moderately (3.01) reflect the competencies the world of work demand from employees. This doesn't mean that all the skills are totally ignored. The result of content analysis revealed that few of the skills under study are reflected in few of the statements of objectives. In both cases, the percentage of objectives that are associated with the skills required by employers is not adequate.

Higher order thinking skills encompass problem-solving skills, critical thinking skills, creativity, and decision-making skills. These skills may reflect the same underlying skill set, which is the ability to take in information from multiple sources, identify the issue, evaluate potential options, and reach an appropriate conclusion. Regarding the nature of learning objectives that are part of the curriculum, teachers believed that the level to which the objectives encourage students to analyze, examine and compare and contrast ideas so that they can develop the higher order cognitive competencies was high (3.50). However, the result of content analysis confirmed that the intent of most of the unit objectives in all the sample textbooks was to encourage students acquire the first two lower-level cognitive skills that have insignificant contribution to the development critical thinking skills, problem-solving skills, decision-making skills and creative thinking skills, and intrapersonal skills and interpersonal skills.

Table 10: Teachers' Responses on the Extent to which the Work Skills are integrated in Secondary School Curriculum

No	The expected work skills	N	VL (%)	L (%)	M (%)	H (%)	VH (%)	Mean
1	Critical thinking skills	241	4.56	32.78	15.32	30.29	17.01	3.22
2	Teamwork skills	241	7.05	34.85	17.01	25.32	15.76	3.08
3	Problem solving skills	241	2.90	39.42	13.69	22.82	21.16	3.20
4	Decision making skills	241	12.86	46.87	5.39	32.36	2.49	2.65
5	Independent learning	241	2.21	27.80	24.89	25.72	19.51	3.32
6	Leadership skills	241	22.41	37.76	6.64	31.53	1.66	2.52
7	Communication skills	241	11.62	34.02	14.11	24.07	16.18	2.99
8	Creative thinking skills	241	14.52	46.47	11.20	26.14	1.66	2.54
9	Self management skill (self discipline, time usage)	241	12.86	41.91	13.28	28.22	3.73	2.68
10	Ability to use technology	241	23.24	38.59	7.88	26.97	3.32	2.48
11	Practical skills	241	12.45	40.66	17.43	24.48	4.98	2.69

Key: N: Total number of respondent, VL: very low, L: low, M: medium, H: high, VH: very high

In order for graduates to be job-ready, secondary education needs to inculcate the work skills demand of employers. Teachers were asked to show their observations regarding the extent to which secondary school curriculum encourage students to develop the skills listed in Table 10. As can be seen from the table, more than half percentage of the respondents agreed that the skills that are identified as essential for students' success in the world of work were not adequately integrated in secondary school curriculum. Though the percentage is varied for each, as indicated in Table 10, the percentage of respondents who believed as the skills that are essential for the world of work are adequately addressed in the textbooks do not exceed 48%. For instance, only 47.30 percent of respondents believed that critical thinking skill is integrated in the textbooks to the level it could encourage students get prepared for the world of work. Similarly, only 45.23%, 43.98%, 41.08% and 40.25% of informants agreed that the extent of integration of independent learning (work) skills, problem-solving skills, collaboration and teamwork, and communication skills (respectively) in secondary school curriculum was high. The mean scores, 3.32, 3.20, 3.08 and 2.99, show that critical thinking skills, independent learning skills, problem-solving skills and communication skills (respectively) are the skills teachers believed as moderately reflected in the textbooks.

As indicated in Table 10, 60.17%, 61.8% and 60.99 % of respondents agreed that the extent of integration of leadership skills, the ability to use technology and creativity (respectively) in the curriculum was low. Only 33.19%, 30.29%, and 27.80% of the informants believed that the level of representation of the three skills in the curriculum was high. In addition, the mean scores, 2.52, 2.48 and 2.54, indicate that leadership skills, the ability to use technology and creative thinking skills are not adequately integrated in the secondary school curriculum. In the same manner, only 34.85%, 31.98% and 29.46% of respondents agreed that the level of integration of decision-making skills, self-management skills and practical skills (respectively) in secondary school curriculum was high. Majority of the respondents, 59.73%, 54.77% and 53.11%, did not realize that the level of integration of the mentioned skills in the textbooks is to the expected level. The mean scores, 2.65, 2.68 and 2.69, also confirmed that the representation of decision-making skills, self-management skills and practical skills was below average. From these results, it is possible to conclude that the skills that are essential to prepare students for work and employers require from secondary school graduates are not adequately integrated in secondary school curriculum.

As mentioned under section 4.3 (the skills required in the world of work), technical skills, time management skills, communication skills, ability to work independently, teamwork and cooperation, self-management skill (self-discipline) and readiness to learn were the most essential skills for both public sectors and nonpublic organizations. However, the results showed that the integration of these skills in the secondary school curriculum was not to the expected level. Respondents believed that critical thinking skills and problem-solving skills are (relatively) the most emphasized skills in the textbooks. This reveals that the skills that took the lower positions in the list of the skills demand of public sectors and nonpublic organizations are more emphasized in secondary school curriculum.

4.5 Relevance of Pedagogical Practices of the Schools to the Work Skills

This section presents how often teachers in secondary schools employed pedagogical approaches that are relevant to encourage students develop the skills and competencies the world of work demanding from employees graduated from secondary schools. The assessment techniques employed in the classrooms and adequacy of the resources that are essential to facilitate students learning and the development of the required work skills are also presented in this section.

4.5.1 Instructional Practices of the Schools

The integration of transversal competencies in the classroom requires teachers to change from being transmitters of knowledge to facilitators. As part of this change, teachers need to adopt student centered learning approaches and integrate competencies across academic curriculum (Terzieva et al., 2015). In relation to this, as can be seen from the Table 11, there is no considerable gap between teachers and students perception about the level of implementation of active learning methods. The aggregated mean score, 3.01 shows that teachers sometimes implemented interactive instructional strategies. Teachers used most of the instructional time to present the lessons and students were passively attending teachers' lecture throughout majority of the instructional time (mean = 3.55). The classroom observations also confirmed that the instructional activities were dominated by teachers' presentations. Hence, it is possible to conclude that teacher centered approach that don't encourage students to develop the skills that prepare them for work, including; the ability to independently complete tasks, solve problems and work with others with minimum support.

In active learning classroom, teaching cannot be viewed as the process of transmission of knowledge and teachers are not monologue actors who just teach completely new lessons. Rather teachers serve as coaches providing assistance and guidance in the students' efforts at constructing their learning. However, almost all students in the classrooms where observations made were passive audiences and not asking questions or seeking support from other students and teachers. By increasing the amount of time devoted to student discussion in the classroom and collaborates in teams and by shifting the responsibility for learning to students teachers can significantly improve the acquisition of work skills among their students. However, analysis of the data collected confirmed that both, students (mean: 3.32) and teachers (mean: 3.49) had similar observation. That is, teachers' presentation (lecture) used majority of the instructional time. Classroom observations also confirmed that the time used to write notes on chalkboard and students spent to take note covered more than half of the allocated instructional time. The instructional approaches observed in the classrooms across majority of the schools were associated with teacher centered strategy where most of the instructional time was dominated by the teacher. Based on the result of the study, it is concluded that implementation of student centered approach which assumes teachers as collaborative partners with students and encourage

them to take an active role and participate in practical, authentic, and meaningful learning which allow them to develop the work skills was less evident in the schools.

Providing students with ready-made information (knowledge) will not encourage them develop critical thinking skills. If students provided tasks that demand them to analyze, synthesize and evaluate information, they will get opportunity to develop the skills required in the world of work. However, the number of instructional activities intended to encourage students to develop critical thinking skills was below average (2.75). The mean score for students, 2.44, shows that the learning activities in the textbooks don't encourage them to develop critical thinking skills. Similar to students' response, the results from classroom observations also confirmed that students were simply watching and listening to teachers' presentations, required to give answer to the oral questions (that demand to yes/no answers), and to react to the oral questions teachers used to revise previously learned lesson or to summarize the day's lesson. Using these findings, one can say that the extent to which teachers' pedagogical practices promoted the development of critical thinking skills was not to the expected level.

Problem-based learning allows students to investigate problems, provide explanations, generate ideas, analyze data, and make judgments in order to find the appropriate solution. Problem-solving is the basic cognitive process for identifying the nature of problems, assessing different options, and making informed choices when there is no clear or routine solution (Greenstein, 2012; Mayer, 2013). Unless teachers encourage students and provide them activities that force them to deal with problems, they wouldn't develop the skills that allow them to solve problems. Though the response towards the extent to which teachers encouraged learners to solve problems independently was found slightly above average (mean=3.21), let alone problems outside classroom, it was identified during classroom observations that the questions they were requested to answer don't require higher order thinking skills. That is, the questions teachers asked students during classroom instructions require rote memorization and comprehension of the learned specific facts and theories. In addition, teachers tend to give answers to students' questions instead of pushing them further with guiding questions to foster analysis and critical thinking. Most of the students did not try; they wait for teachers to provide answers, instead of trying to find solutions through alternative means or student- to-student discussion. However, few

teachers tried to perform better in pushing students to use critical thinking skills in solving problems using prior knowledge and learning and in providing feedback to students.

Table 11: Responses on Instructional Practices of the Schools as Perceived by Teachers and Students

No	Items: **Teachers:**	M (T)	M (S)	Agg. M	SD
1	employ the different interactive (student centered) instructional strategies in teaching the lessons (topics)	3.28	2.92	3.07	1.15
2	use majority of the instructional time to lecture the lesson	3.67	3.42	3.55	0.98
3	ask students to do learning activities that demand them to analyze, synthesize and evaluate information/data	3.16	2.44	2.75	1.19
4	encourage students to identify and solve problems independently	3.53	2.96	3.21	1.22
5	provide activities that demand students to generate ideas, test out ideas & invent a solution to a problem	2.95	2.61	2.78	1.13
6	give students opportunity to make decisions on the basis of valid reasons and explain the rationale behind their judgment	3.15	2.44	2.74	1.23
7	encourage students to draw their own conclusions based on analysis and interpretation of relevant facts	3.08	2.36	2.67	1.14
8	arrange group discussion/group work during instruction	3.32	3.07	3.18	1.12
9	give students different responsibilities (leader, time keeper, moderator, presenter) during group discussion/work	3.08	2.61	2.82	1.13
10	give students chance to supervise & provide feedback to other students' work	2.87	2.25	2.53	1.11
11	encourage students to prepare and deliver oral presentation/reflection in the classroom or during instruction	3.10	2.31	2.70	1.16
12	arrange debate at school / classroom level	2.53	2.07	2.27	1.15
13	invite students to do project work or conduct laboratory experiment when needed	2.46	1.50	1.92	1.18
14	order students to write & submit laboratory / project work reports	2.26	1.79	2.00	1.42
15	connect classroom instruction to relevant environments & tasks (jobs)	3.22	2.40	2.76	1.32
16	provide activities that require students to demonstrate using different tools & procedures	2.89	1.95	2.37	1.16
17	give students activities to be done individually	3.57	2.42	2.92	1.07
18	give students tasks to be completed within the given time using the prescribed criteria & procedure	3.36	3.23	3.29	1.09
19	arrange study trip to help students visit different industries or historical areas and reflect their observations	1.97	1.50	1.71	1.11
20	encourage students to prepare and use classroom or instructional rules & norms	3.33	2.38	2.79	1.30

Note. Expected mean = 3.00, M (T) = Mean for teachers, M(S) = mean for students

As shown in Table 11, the mean value, 2.53, indicates that the instructional activities employed in the classrooms didn't invite students to generate ideas, test out ideas and invent a solution to a problem. The data collected during observations also realized that students were not encouraged to develop creative thinking skills. The major tasks of students in the classrooms where observations were made were listening to the teachers' presentation. Students were asked to respond to oral questions or search answers from textbooks or solve problems by using the provided formulas and theories independently or in small groups. The only source of instructional activities employed during instruction and the questions asked by teachers were student textbooks. It implies that the nature of the learning experiences employed in the classrooms was depends on the nature of the review exercises, end-of-unit-questions and activities that are part of the textbooks students are using. The results from content analysis showed that most of the learning activities that are part of the textbooks do not encourage creative thinking skills. Based on these findings, it can be concluded that the instructional activities employed in the classrooms didn't encourage students to use and develop creativity.

A key prerequisite for decision-making skills is the ability to judge the causes, consequences, benefits and disadvantages of the problem, and the ability to seek different alternatives to the problem. Decision-making is not possible without well-developed problem-solving skills and critical thinking skills. This approach allows students to develop the ability to identify, analyze and define problems, to know and apply strategies for dealing with unfamiliar problems, to generate, analyze and select problem-solving strategies and to make justifiable decisions (Alismail, and McGuire, 2015). Item number 6 was planned to identify how often teachers encouraged students to develop decision-making skills. The study depicted that the instructional activities employed in the classrooms were rarely (mean values = 2.74) invited students to make decisions and require them to justify their choices. Similarly, it was learned during classroom observations that in rare case students were asked to select from alternatives in different forms (make decision). None of the teachers in the observed classrooms requested students to justify their decisions/ choices. Data from both resources (questionnaire and observations) confirmed that pedagogical practices of the schools rarely encouraged students to develop decision-making skills.

Critical thinking skills involve analyzing and evaluating evidences, evaluating information from multiple perspectives and deriving conclusions on the basis of analysis. Respondents were asked to show how often teachers encourage students to draw their own conclusions based on analysis and interpretation of relevant facts so that they develop critical thinking, problem-solving and decision-making skills. The aggregated mean value, 2.67 shows that teachers sometimes used activities that invite students to make their own conclusion. Similar to the aggregated mean values, the results from classroom observations showed that most of the teachers didn't give students sufficient time to think critically to make their own conclusions. This implies that the space given in the schools pedagogical practices to allow students searching and analyzing relevant information to make informed conclusion was not adequate.

The instruction which is assumed as effective in enabling students develops the work skills require student-centered which gives a greater focus on students' active participation. When students work cooperatively together, they learn to give and receive help, share ideas and listen to other students perspectives, seek new ways of clarifying differences and resolving problems, and construct new understandings and learning from engaging in these processes (Gillies, 2016). In this regard, teachers and students participated in filling the questionnaire agreed that teachers sometimes (3.18) arranged students in small groups to encourage them discuss and complete tasks together. When students engage discussions and activities about shared problems or tasks, their engagement stimulate not only themselves but also another group member to use the relevant thinking strategies and processes (e.g., hypothesizing, predicting, and explaining) in their search for an answer. However, it was learned from classroom observations that the classrooms weren't organized in ways it allows students to develop the skills help them to work together and actively engaged in learning, work and life activities. Moreover, data from classroom observations indicated that there was no strong evidence that proofs the pedagogical activities that strengthen the development of teamwork, cooperation, time management, self control skills and leadership skills. This doesn't mean that the teachers' pedagogical approaches totally denied students active involvement. Relatively more meaningful small group discussions were made in few of Chemistry classrooms.

When students work collaboratively, there is an expectation that all group members are assigned to specific roles and contribute equally. The primary reason for assigning roles is to ensure that

no member dominates the group, or contributes nothing (Yager, 1991 cited in Kim, 2005). The study revealed that teachers sometimes organized students in small groups. Moreover, teachers responded as they sometimes (3.08) assigned students to different responsibilities demonstrated during small group discussions. In contrary to the teachers' response, students claimed that they were rarely (2.61) assigned to different responsibilities during small group discussions and completing tasks together. The massage of the data obtained during classroom observations is similar to students' opinion. That is, the instructions employed in the classrooms were teacher centered, with little evidence of student collaborative and active involvement. In the classrooms where teachers organized group discussion, students who were assigned as a group leader demonstrated all the responsibilities expected to be acted by the different group members. In the classroom where group discussion/work was evident, one or two students in each group were trying to deal with the provided learning tasks and share his/her understandings to the group members and to the whole class. Besides, the learning activities employed at classroom level do not encourage students develop to acquire the work skills, including analytical skills, oral-communication, social-interaction, ability to synthesize the arguments, speak impromptu, and make informed decisions and judgments that are expected to be achieved through cooperative learning. It implies that the pedagogical practices in majority of the observed classrooms didn't invite students to get prepared for different responsibilities expected to be demonstrated in the workplaces.

According to constructivist theory, feedback is considered as a key component of collaborative learning and assessment activity which makes students more responsible for their actions, encourages a reflexive approach to learning, involves learners in judging their performance or that of their peers, and enhances students' self-regulation (Hounsell, 2007). The aggregated mean value, 2.53 obtained in response to the item says, 'how often teachers give students chance to supervise and provide feedback to other students work and encourage them to use the feedback to revise their work' implies that students weren't provided the chance to get support from their peers, providing feedback for others works and learn decision making skills. The classroom observations also confirmed that students were not allowed to receive feedback and comment other students work.

Wagner (2008) indicates that the ability to express one‘s views clearly and communicate effectively is an important skill in the world of work. Students develop communication skills when teacher use student-centered interactive instructional approaches where students work in cooperative learning groups and ask questions from topics, and present about items and issues from assigned readings, and questions. In this regard, students reported that the opportunity they offered to present their understandings to the class so that they could develop communication skills was low (mean=2.31). That is, the extent to which teachers' pedagogical strategies encourage students to get the experience that help them to speak confidently and clearly and give them the chance to practice presentation skill during instruction was below the expectations. The average mean scores, 2.70 also realized that the opportunity given for students to make oral presentation was below the expected mean value. The results from classroom observations also realized that students were required to attentively follow the teachers' activities and passively take notes. Questions that require yes/no answer and numeric results that demand simple mathematical operations that don't demand time taking preparation, critical thinking and organized communication skills were the only room opened for students to reflect their views.

Debate nurture learners' analytical skills, oral-communication, social-interaction, ability to synthesize arguments, speak impromptu, and make informed decisions and judgments based on facts and authentic resources (Gervey, Drout and Wang, 2009). Classroom debate is essential in all subject areas and to all students regardless of their academic grade level. However, it was agreed among respondents that debate wasn't the strategy frequently implemented neither in the classrooms nor organized at school level to help students achieve the intended benefits expected from using debate as learning strategy (mean=2.27). Consequently, it is safe to say that one among the strategies used to facilitate the development of critical thinking skills, communication skills and decision-making skills was denied in the schools under investigation.

Project-based instruction is an authentic instructional model or strategy that has roots in the constructivist approach and promotes creative and reflective thinking skills (Barron and Darling, 2008). Laboratory work enhance mastery of subject matter, developing scientific reasoning, understanding of empirical work, developing practical skills, and developing teamwork abilities. Though there are considerable number of projects works and experiments in science textbooks, reports (mean= 1.92) and observations realized that neither of them was practiced in the schools

due to different reasons. From the observations made to identify if the schools were using laboratory to teach practical skills, it was learned that students were not offered the opportunity to take part in experimentations that help them to develop the skills required from 21st century workforce, such as problem-solving, critical-thinking, self-guided learning, communication and teamwork. In few schools rooms were assigned as Biology and/or Chemistry and/or Physics laboratory room. However, the reserved rooms weren't serving the intended purpose due to different reasons. Lack laboratory chemicals, apparatuses and laboratory technician were among the factors hindered realization of experiments listed in textbooks. In the absence of real engagement in project work and laboratory experiment, it is unusual to expect written or oral report from students. The report from teachers and students also confirmed that students were not required to submit any kind of laboratory report and rarely (2.00) requested to submit project work report. As a result, it is concluded that the schools weren't encouraging students to develop the work skills including problem-solving skills, working with others, critical thinking skills, creativity and the ability to prepare and deliver oral and written reports that are expected to be acquired through project work and experiments.

Teaching and learning activities should encourage students to work individually or in small groups, observe and/or manipulate the objects or materials they are studying and connect the theory to the practical life and work environment. Hence, teachers are required to teach basic practical skills that are the basics to easily acquire technical skills industries and public organization require from employees graduated from secondary school. In this regard, both teachers and students were asked to show the level of agreement with the view that secondary school instruction by associating to the practical skills that are related to students' future career. The reports obtained from the two groups of informants shows that there is a significant difference between the mean value for teachers and students. Students believed that teachers rarely (2.40**)** associated the learning activities to the actual outside classroom context**.** However, teacher argued that they were connecting the lessons to the skills students need in their life (3.22). Data through observation supports students' judgment. That is, the instructions made in most of the classrooms focused on theoretical knowledge without showing the connection between the lessons and the real work environment. In other words, the pedagogical activities

employed in the schools were not focused on practical activity that are relevant to equip them with the skills required in the world of work.

Today, the most popular strategy suggested for practical work is an inquiry. Inquiry-based practical work and activities require students to think of problems, formulate hypotheses, design experiments, gather data, and draw conclusions from scientific phenomena (Hofstein, 2017), and requires purposeful observations or scientific inquires by manipulating equipment and materials (Lederman & Lederman, 2012). Item 16 was designed to identify if teachers provided students activities that demand them to use different tools and apply a range of strategies and techniques. In response to the item, it was identified that learners rarely (mean = 2.37) provided activities that demand them to use instructional tools that help them develop basic practical skills. Practical activities have the potential to promote higher-order cognitive skills, and enhance the students' technical skills and attitudes towards work if it is structured properly. It also provides chances for collaboration, deliberation, and communication with peers (Katchevich et al., 2013). However, the results from the study revealed that, a practical activity, which is recognized as it is vital to develop the mentioned work skills wasn't evident in the school under investigation.

The key ingredient for independent learning is shifting the responsibility for students learning from the teacher to student. Learning how to learn enable students acquired the set of skills and knowledge required to learn efficiently and effectively in any learning situation. Consequently, teachers are expected to equip students with the skills to learn and inquire for themselves, by striking a careful balance between ensuring students are equipped with core academic knowledge and facilitating the development of higher-order thinking skills that are essential to acquire the ability to learn throughout work and life. In this regard, informants agreed that teachers were tried to encourage students to complete tasks individually (mean= 2.92), however data from classroom observations identified that the tasks students provided to complete independently focus on theoretical concepts and knowledge that don't require students to use the skills that are vital to be successful in the world of work, including inquiry skills and other higher order thinking skills. Independent learning has implications for responsible decision making, as individuals are expected to analyze problems, reflect on their work, make decisions and take purposeful actions. However, it seems that independent learning perceived as it merely involving students to work on tasks alone by reducing the important role teachers can play in enabling and

supporting independent learning. This might be due to misconceptions with the teachers understanding about the concept of independent learning. As a result, it is concluded that the schools weren't performing in the ways students develop the skills help them to complete tasks independently.

Study trip is the act of taking students (industry or historical places) out of the classroom for the purpose of learning through selective observation. Selective observation which is supported with experts' explanation encourages students to develop work habit, positive attitude towards work, connect theory to practice, and ability to analyze, synthesize and summarize information and reflect on their observation. Though the study area is conducive environment for students to gain direct experience through direct purposeful experience, the result of the study showed that students weren't given chance to visit any relevant location (industry or historical places). Particularly, responses from students (mean: 1.50) shows that educational tour which can offer them the opportunity to observed their potential future work places was ignored. As indicated in MoE (2009), Chemistry plays an indispensable role in all the processes and production of materials, equipments and chemicals. However, the study revealed that one among the strategies, study trip, which allow students to visit different factories and laboratory experiments to learn collecting, analyze and synthesis information so that they develop critical thinking skills, problem-solving skills, communication skills and team skills was denied. When students leave the classroom, they see the connections between theories they have learned in school and the real world of work. Also it helps them to acquire the skills help them to solve problems they see in the world of work that have direct impact on who they become as worker. Students who go on field trip become more empathetic, tolerant and critical thinker, and help them to improve a desire to learn more, observation skills and social skills (Behrendt and Franklin, 2014). Though the study area is where many industries are available to open opportunity for students to gain direct experience, the aggregated mean value (1.71) confirmed that students weren't given chance to visit any relevant place or industries that encourage them to develop the work skills. Hence, one can conclude that the opportunity to acquire the work skills and work habits and attitudes expected to be achieved through educational tour was totally denied.

Self-discipline is among the most desirable self management qualities pupils need to develop regardless of their age as it positively affects the level of learning and personal growth (Hagger,

and Hamilton, 2018). Students with high self-discipline are able to control impulse-driven answers and focus on task. Pupils with well-developed self-discipline are characterized by reliability, hard-working, and the ability to complete the task. Low self-discipline not only limits the individual, but also creates complex behavioral problems for surrounding pupils at class level. In this regard, the study found that the actions taken to help students learn and develop self-control skills were not encouraging. The responses obtained from students (mean= 2.38) shows that students involvement in the process of preparation of classroom rules and norms was very low. Effective self control skills cannot be resulted from enforcement of the regulations developed by external bodies without involvement of the users using the consequences as a major tool. Observations confirmed that there was no any symbol or clearly visible posters (where available) representing the rules and norms to be obeyed are observed in the classrooms of the schools. However, the efforts made to help students develop time management skill was encouraging. It was reported that students were frequently provided activities to be completed within the given time using the prescribed criteria and procedure. It was common to observe in most of the classrooms when the teacher requested students to do and finish class work and home works within the given time. Though the offered tasks were theoretical in nature, the major problem was lack of commitment to give feedback to student work.

4.5.2 Assessment Practices of the Schools

Peer-feedback is regarded as a form of formative assessment, and as a form of collaborative learning (Van Gennip, Segers, & Tillema 2010). However, the results showed that teachers rarely (mean = 2.65) opened opportunity for students to engaged in activities that allow them to develop attitude and skills help them to feel responsible for their actions, encourages a reflexive approach to learning, involves learners in judging their performance or that of their peers, and also the developing and using of evaluative expertise, and providing, seeking and utilizing feedback. The most important evidence obtained from students (mean = 2.56) showed that teachers weren't frequently encouraging students to acquire the skills expected from peer evaluation and feedback. Moreover, it was identified that one among the strategies that are vital to develop decision making skills wasn't evident in the observed classrooms.

Table 12: Perceptions on the Nature of Assessment Techniques Employed in the Schools

No	How often teachers:	M(T)	M(S)	Agg M	SD
1	invite students to assess other students' work and give feedback to peers	3.16	2.25	2.65	1.20
2	use assessment tools & items that invite students to compare & analyze information, draw their own conclusions, and solve problems	3.36	2.61	2.94	1.11
3	use oral presentation as an assessment tool	3.33	2.69	2.97	1.27
4	evaluate (assess) practical skills as frequent as that of paper and pencil exam	3.20	2.46	2.78	1.23

Note. Expected mean = 3.00, M (T) = Mean for teachers, M(S) = mean for students

Assessing student performances provides information not only to education system, school, teacher, student and parent, but also mirrors the education goals, as do curriculum and pedagogy. In the context of assessment administered in classrooms, we must move from a 'closed' question where correct answers are prioritized, to 'open' questions or prompts, which require a student to demonstrate cognitive and social skills. However, it was found that teachers weren't often (mean=2.94) used assessment items or tools that demand students to analyze, synthesize, summarize and evaluate information and draw their own conclusion and solve problems. That is, the assessment strategies that have been used in the schools were mainly used to measure student learning which is primarily content-based that have insignificant association with student learning that focus on development and enhancement of competencies required in the world of work.

Assessment can be used in guiding students' learning, providing feedback on the effectiveness of the teaching and learning operations and in informing learners and teachers on how well they are all doing in attaining the learning goals. Regarding assessment tools employed in the classrooms, it was reported that oral presentation was not used frequently (mean= 2.97) as an assessment tool used to evaluate students performance. That is, the assessment tools teachers used did not open adequate opportunity for students to developed communication skills required in the world of work. There are multiple techniques that are essential to measure different areas of competencies. Demonstration is among the methods appropriate to assess communication skills, critical thinking, and basic technical skills that are crucial to survive as employee in the workplace. In response to the items used to ask if teachers were used practical examination as

frequent as paper and pencil examination, the response obtained confirmed that they were rarely (mean: 2.78) implemented the tools to assess students practical demonstration skills. These findings show that relevance of the assessment tools employed in the school was not to the level it encourage students to develop the work skills employers requiring from employees graduating from secondary school.

4.5.3 The Schools Conditions: Learning Environment

It is what teachers do or fail to do that determines the bottom line index of the success of educational policies (Obanya, 2010 as cited in Roseman, 2018). The data obtained through questionnaire showed that majority of the teachers in the schools satisfy the requirements of Ministry of Education in terms of their level of education and qualification (mean = 3.72). However, there is a significant different between the mean score for teachers and students. Students agreed that the number of teachers qualified with the required knowledge and skills was not adequate. The difference in mean values might be because of tecahers' performance related to pedagogical content knowledge and skills. Data from classroom observation also confirmed that, though academic status of teachers was satisfactory, the instruction strategies employed in the classrooms didn't give confidence to conclude as teachers who are pedagogically skilled were adequately available in the schools.

Effective instructional leaders usually place priority on curriculum and instructional issues. Though effectiveness of a school is affected by various factors, the contribution of school principals takes the highest portion. In response to the question asked to identify if the school principals were committed to facilitate student maximum learning, respondents agreed that the commitment of the school leaders was slightly higher than the average mean (3.43). However, classroom observations did not confirmed the result obtained through questionnaire. Shortage of resources and lack of coordination among the available school resources might be resulted from the school principal's leadership performances.

Table 13: Availability of Resources in the Schools, as Perceived by Teachers and Students

No	School conditions	M(T)	M(S)	Agg M	SD
1	Knowledgeable & skilled teachers are adequately available	4.02	3.48	3.72	.90
2	School principals facilitate students maximum learning	3.55	3.33	3.43	1.09
3	School environment is conducive for students learning	2.77	2.43	2.58	1.30
4	Instructional materials are adequately available in the school	2.78	2.29	2.55	1.36

Note. Expected mean = 3.00, M (T) = Mean for teachers, M(S) = mean for students

Positive learning outcomes happen in quality learning environments. The learning environment can be broadly defined as the social, physical, psychological and pedagogical context in which learning occurs (Fraser, 1998 as cited in Nix, Fraser &Leadbetter, 2005). It is not only the physical environment of the classroom but also the social environment and interactions between teachers and learner that affects the learning and teaching processes. The results of the study showed that the status of learning environment of the school was not conducive enough (mean value = 2.58) to encourage students to achieve the skills students need to be effective in the world of work. An attractive and functional classroom contributes to effective teaching. A clean, orderly equipped classroom sets the tone for a welcoming environment conducive to learning. A relevant and well-designed curriculum along with available essential teaching and learning materials means little without attractive classroom learning environment (Dembélé, 2005 as cited in Roseman, 2018). However, the observations in the classrooms confirmed that the class size, students' behavior and classroom facilities were among the factors affecting teachers' effort to support students develop the required skills. Moreover, the inside classroom physical environment of few schools wasn't attractive and not arranged in the way it facilitates students learning. Based on these results, it is possible infer that the school environments were not conducive to equip students with the skills required in the world of work.

Teaching and learning materials, such as textbooks, supplementary reading materials, teacher guides as well as information and communications technology (ICT) and innovative resources including, computer, audiovisuals, learning centers, and exploratory materials are among teaching and learning resources (Borich, 2017). Using varieties of instructional materials

teachers encourage learners to use their own experiences and preferred learning modalities to construct and demonstrate what they have learned. However, the study found out that both group of respondents, teachers and students, agreed that availability of instructional materials in the schools was inadequate (mean = 2.55). Observations made in the schools also confirmed that significant shortage of educational resources, including shortage of reference materials, computer laboratories, computer in laboratories (where computer lab exist), and absence of appropriate learning materials and resources for experimentation was among the factors contributed to minimize the work skill development of students. Except in few schools, in majority of the schools, laboratory rooms, laboratory equipments and chemicals that are essential for students' skill development were not available. Effective teaching requires a physical space that is conducive to teaching and learning. However, during observations made in the schools it was identified that shortage of basic educational resources (instructional materials and facilities), such as lack of laboratory rooms, chemicals and equipments, shortage of instructional aids in pedagogical centers, absence of internet access, lack of functional ICT room, electricity and water remain among the challenges that reduced the effectiveness of the schools pedagogical practices to equip students with the required skills.

4.6 Coherence among Education Policy, Curriculum, and Instructional Process

This section presents the coherence of the issues addressed in the Education Policy documents, secondary school curriculum and pedagogical practices of the schools in terms of the purpose of secondary education and the skills demand of the world of work. The Education Policy (1994) document presents the aims and objectives of education intended to guide the decisions and implementation processes, curriculum educational structure, and educational measurement and examination and educational inputs. The curriculum framework for Kg-G12 (2009) specifies the vision, key competencies, goals of learning, learning areas and contents to be learned at different grade levels and the prescribed instructional and assessment techniques to be implemented in the actual classrooms. The curriculum and instructional practices of the schools are described in terms of the ways the concern of the Education Policy and curriculum framework were addressed in the textbooks and the elements of curriculum were delivered in the actual teaching-learning environments. Consequently, the aim of education, general and specific objectives of education,

goal of secondary education and curriculum experiences included in the textbooks were used as units of analysis in examining the alignment between the three categories mentioned above.

As clearly stated in education policy document (TGE, 1994), preparing students for work and encouraging them to develop positive work habits, respect for work and high regard for work are among the major targets of the Ethiopian education. Providing students with the knowledge, skills, abilities and attitudes that enable them make all rounded participation is also among the aims of education. Among the various skills the world of work requires from secondary school graduates, only problem-solving skills, cooperation and use of technology are clearly indicated in the policy document. However, the policy didn't clearly show the skills expected to be achieved at secondary school level. Moreover, majority of the skills the world of work demand from applicants and employees graduated from secondary school are not included in the statements of the aims of education. However, almost all the skills required to enter to the world of work are mentioned under objectives of education. Critical thinking, problem-solving, creativity, communication, self regulation skills, use of technology and technical skills are the skills that are listed as major or specific objectives of education in Ethiopia. However, the specific priority targets and objectives intended to be attained at different level of education in general and secondary education in particular was not clearly mentioned. Under the section named as 'curriculum', the policy recommended that basic education need to focus on literacy, numeracy, environment, agriculture, crafts, home science, health services and civics. This was to address the importance of different areas of knowledge and vocational contents and subjects for students' future life, work and education. Based on these findings it can be concluded that some of the skills employers require are mentioned in the policy document, and the aligning bond between the different sections of the document with regard to the skills required in the world of work is strong. However, the grade level at which the identified skills will be achieved is not identified.

With regard to the skill development, at broader level, the intent of the education policy and curriculum framework is almost similar. However, the actual curriculum structure and the learning areas identified to be learned at secondary school level are not relevant enough to equip students with the skills require for work. In other words, the future of students who are interested to join the world of work after graduation from secondary school hasn't been secured because of the non-job specific skills didn't attract the interests of the curriculum planners and experts.

Integration of one or more vocational subjects in academic secondary education curriculum alone doesn't enhance the efforts made to prepare students for the world of work. The curriculum and school structure we have been using assume all students as similar. That is, our curriculum structure assumes that the only school type we have at secondary school level can satisfy the diverse needs students, demands of the world of work and the requirements of the next level of education expecting from secondary school graduates. Lack of coherence between the intent of education policy and secondary school curriculum structure was among the factors affecting effectiveness of the education system.

Central to the teaching and learning process is the curriculum. It is in the curriculum that the effective teaching and learning of relevant skills, knowledge and values should take place (Hoppers & Yekhlef, 2012 as cited in Roseman, 2018). The curriculum is translated to the classroom where it transforms into and becomes tasks, activities, interactions and discourse. The study revealed that, though the level and specificity of the issue is different, importance of the skills the world of work requiring from secondary school graduates was indicted in the education policy and the program and strategies produced following the policy and the curriculum framework for KG-Grade 12. It was also identified that the number of the required skills is better represented in the curriculum framework, the grade level at which these skills need to be achieved is not clearly indicated.

The curriculum framework identified some of the key skills as they are important for students' future work and life. However, the instructional objectives, activities and exercises and end-of-unit-questions included in secondary school textbooks don't encourage students to acquire the skills employers demanding from secondary school graduates. These results confirm that the strength of aligning bond between the curriculum framework and the textbooks was very weak. This doesn't mean that there is strong consistency among the different parts of the curriculum frame work. The learning areas indentified to be learned at secondary school level are more of academic in nature. Adding vocational courses to the academic curriculum in use cannot guarantee satisfaction of the needs of the world of work. Research findings indicating that, if the intention is to prepare students for the world of work, the fundamental work employers around the world demanding from secondary school graduates should be included in the curriculum.

However, the findings of the study revealed that the curriculum structure as well as the curriculum elements didn't satisfy the skills requirements of the world of work.

Teachers are required to have adequate subject matter knowledge and pedagogical skills. Similarly, they are expected to have awareness about the country's aim and objectives of education, the goal of secondary education, and the teaching methods, strategies and techniques and evaluation approaches that are crucial to achieve the intended goal of education and prepare students for the different destinations they aspire after secondary school. However, data from classroom observations and responses obtained from students confirmed that the instructional strategies and learning activities employed in most of the classrooms didn't facilitate the development the skills required in the world of work. The results identified through classroom observations and questionnaire data depicted that teacher centered approaches that have insignificant contribution for the development of the skills under investigation were dominating the instructional activities. As a result, it is concluded that the pedagogical practices of the schools weren't in line with the intent of the policy and curriculum framework. This implies that secondary school curriculum and instructional activities employed in the schools didn't read the intention of the policy and curriculum framework. No matter how well the developed curriculum is relevant, it will not achieve its objectives unless teachers who put curriculum into practice fulfill their tasks efficiently. The results from analysis of the textbooks confirmed that some of the review activities included the textbooks were designed to encourage students develop some of the identified work skills. However, the actual classroom observations revealed that the instructional activities employed in the schools were not encouraged students to acquire the skills the activities in the textbooks are intended to be achieved through classroom instructions. Hence, it is possible to conclude that the instruction activities employed in the schools didn't integrate the skills students require to be effective in the world of work. This shows lack of strong coherence between pedagogical practices of the schools and the policy and/or curriculum framework/or the curriculum/textbooks.

In summary, unless the education policy, curriculum framework, curriculum and pedagogical practices of the schools aligned, the probability to achieve the intended goal of certain level of education is low. Regarding the skills demand of the world of work, analysis of coherence between the three elements reveled that there is no potential disconnect between the general aim

and objectives of education discussed as the education policy priorities and goal of secondary education, vision, mission, key competencies, learning areas and pedagogical orientations described in the curriculum framework document. This doesn't mean that the core work skills secondary school students need for their future career are clearly defined in both documents. On the other hand, it was identified that there is no strong alignment between the intention of the policy or curriculum framework document and secondary school curriculum. That is to say, the key competencies and the core work skills prescribed to be attained are not adequately included in secondary school textbooks. In contrast to the priority of the policy and curriculum framework, it was learned from textbook analysis that majority of the instructional objectives and learning experiences were designed to encourage students to develop lower order thinking skills that have insignificant role to prepare students for work. In addition, integration of the work skills that are categorized under cognitive domain, interpersonal skills and intrapersonal skills integrated in the curriculum do not satisfy the expectation of the policy and curriculum framework. The result of analysis of data focused on pedagogical practices of the school also confirmed that the instructional activities employed in majority of the classrooms weren't in the position to encourage students develop the work skills and the key competencies mentioned in the curriculum framework. Thus, it is possible to conclude that pedagogical practices of the schools was not aligned with the goal of secondary education to prepare students for work and the aim and objectives of education indicated in the policy documents. This confirms that pedagogical practices of the schools were not in line with the intention of the policy documents.

CHAPTER V

Summary, Conclusions and Implications

5.1 Summary

The study was intended to assess the space accorded 'preparation for work' in secondary school curriculum and instruction with the aim of examining relevance of secondary education to the world of work. Concurrent mixed approach which enables converging and merging of quantitative and qualitative data was employed to achieve the intended aim of the study. The concurrent triangulation mixed method was selected with the assumption that it allows not only confirmation or corroboration of data collected from different sources but also integrating the quantitative and qualitative data in a preferred sequence. Both qualitative and quantitative content analysis and descriptive case study were used as research methods. Secondary school curriculum materials (textbooks), organizations that have employed secondary school graduates, employees graduated from secondary schools, subject curriculum experts, secondary school principals, teachers and students were the major data sources. The Education and Training Policy (1994), Curriculum Framework for Kg to Grade 12 (2009) and EDSP (III- VI) documents are the secondary data sources used in this study. This study employed interview, observation, questionnaire, and document analysis to collect data from the various data sources.

Non-public organizations and public sectors that have employed (relatively) large number of secondary school graduates were selected purposely. Human resource heads, HR experts, and supervisors or technical managers of both types of organizations were included in the study because of relevance of their responsibilities to the required data and closeness of their positions to employees graduated from secondary schools. Employees were selected using simple random sampling method because of similarity of their responsibilities. Among secondary school subjects, Chemistry, Biology, History and Geography were selected intentionally to include both streams (natural science and social science) in the study. The curriculum experts of the selected subjects were purposely included for the reason that they are experts of the subjects at MoE and their direct involvement in preparation of curriculum materials. The teachers who were available during visit to schools and volunteer to fill-in and returned the questionnaires were 241. Equal number of students from each sample schools and proportional number from each grade, a total

of 214 students were involved in the study. In this study, both quantitative and qualitative methods of data analysis were employed. The quantitative data were analyzed using frequency, percentage, mean, and standard deviations. Qualitative data obtained through open-ended questions, observations and interviews were analyzed qualitatively and narrated separately or next to the quantitative data that have similar concern. Data collected through document analysis was mainly analyzed qualitatively, whereas some of the data were summarized and described quantitatively using frequency and percentage.

Based on analysis of the data, the following results were obtained for each of the basic research questions.

1. **Educators and students understanding of the purpose and relevance of secondary education**

The results of analysis of the Education Policy, Curriculum Framework (for Kg to grade 12) and ESDP documents revealed that preparing students for work is among the purposes of education. Providing students with the knowledge, skills, abilities and attitudes that are essential to enable them make all rounded participation is also among the major aims of education. However, the study identified that some of the skills employers demand from secondary schools graduates are not addressed in the policy document. Problem-solving skills, communication skills, ability to use technology, technical skills, creativity and decision-making skills are mentioned as the most essential skills to produce productive citizens. In contrast, the curriculum framework (for Kg-grade 12) identified higher order thinking skills, life skills and base line skills as the key competencies students require for future education and work. The results indicate that the skills employers expect from secondary school graduates are not adequately and equally reflected in the different documents. Moreover, the skills to be attained at different grade levels (e.g., secondary school) are not clearly specified in the documents. It was also identified that constructivists theory and learner-centered approach are prescribed to design and prepare relevant curriculum and to be implemented during instruction. However, the results from content analysis confirmed that the textbooks are not prepared using the suggested theories. In the same manner, implementation of the proposed instructional strategies was not realized in the schools.

Although preparation for work is among the goals of secondary education, the education system and the curriculum structure do not allow the schools to prepare students to the expected level.

The secondary school curriculum structure is mainly to serve students who are interested to join higher education. The subjects that are identified to be offered at general secondary school level and categorized to two different streams at upper secondary school level (grade 11 and 12) are academic oriented. The Education policy did not suggest alternative educational tracks and different types of schools so that students get prepared for different destinations based on their interests and capabilities. Moreover, the prescribed education structure do not allow schools to have alternative curriculum structure that allow students to start the track that could take them to their interest of destinations after secondary school; either the world of work or the different specialization areas offered in higher education institutions. Moreover, the concern to identify the potential employers of secondary school graduates and to specify the competencies and skills the world of work demand from secondary school graduates and to integrate them in the curriculum was not observed.

The curriculum structures that have been implemented in Ethiopian education system including the recently introduced structure assume all students have similar interest, capability, plan and destinations after secondary education. Consequently, they have been forced to stay in classrooms that offer the same subjects and prepare them for similar destination regardless of the mentioned differences and demand of the employers. The only option that has been suggested for students who are not successful in national examinations is vocational trainings or vocational oriented subjects expected to provide job-specific skills that help them to be employed in specialized companies. However, most of the organizations attracting secondary school graduates who are interested to join the world of work immediately after secondary education demand the identified work skills. The results of the study revealed that the skills employers expect from secondary school graduates didn't get the concern of the curriculum planners.

The results of the study show that educators and students did not consider preparation for work as the major purpose of secondary education. Preparation for national examination and higher education was believed as the main goal of secondary education. In addition, the study revealed that school principals, teachers and students were not aware of the possible destinations of secondary school students immediately after secondary education other than higher education institutions. Though large number of secondary school graduates is out of the higher education institutions, the results of the study show that majority of the students have planned to attend

higher education. The major intention of the curriculum experts, school principals and teachers was also to provide students with the knowledge that help them to be successful in the national examinations and the next level of education.

Curriculum experts explained relevance of education by comparing the curriculum contents with the nature of the subject and human development aspects. The scope and depth of the contents to be learned at certain grade level are among the criteria to evaluate relevance of education. None of the experts tried to refer relevance of education to the skills demand of the world of work. Teachers and school principals evaluate relevance of education in terms of the association between the subjects at secondary school level and the course offering of universities. The school principals and teachers reported that the major focus of their regular activity is on improving academic achievement of students so that they will get the pass mark or score the highest mark in national examinations. Students defined relevance of education in terms of the knowledge and skills they need to become successful in national examination and in the next level of education. No informant among school principals, teachers and students associated relevance of secondary education to the skills demand of employers. Effectiveness of schools, evaluation of teacher's performance and the status of school's learning environment are also attached to students' examination results.

2. Knowledge, skills and attitudes employers look from secondary school graduates

The study revealed that the work skills employers expect from secondary school graduates is similar. However, the level of importance of the identified work skills was slightly different based on the responsibilities of the employees. Among the skills under investigation, it was found that time management, the ability to complete tasks independently, readiness and ability to learn, teamwork and collaboration, communication skills, and self management (work ethics, self discipline) are the skills employees graduated from secondary schools must demonstrate to survive in the non-public organizations. The level of importance of creativity, critical thinking skills, problem-solving skills, leadership skills and decision-making skills for employees in nonpublic organizations was not high. The results show that time management, independently accomplishing tasks, teamwork, communication skills, and self management skills (self-discipline) are the most important skills for secondary school graduates in public sectors. Readiness to learn, problem-solving skills and critical thinking skills took the middle position.

Creativity, decision-making skills and leadership skills are the rarely required skills from secondary school graduates in public sectors. Technical skills are mandatory to survive in both public sectors and non-public institutions. However, non-public organizations (industries) provide pre-service training on technical skills for the novice employees.

The responses obtained from employees are not different from that of employers. Time management skills, ability and readiness to learn, independent work, self management skills, teamwork and collaboration and communication skills are the six top skills employees must demonstrate while they are doing their job as operator or line/team leader in non-public organizations. In addition to the mentioned skills, team/line leaders are expected to demonstrate leadership skills. Among the skills required in the public sectors, employees mentioned time usage, work independently, self management skills and readiness and ability to learn as the most important skills to be effective at workplace. Employees in both types of organizations reported that creativity, problem-solving skills, critical thinking skills and decision-making are not among the most essential skills to perform their duties. The results show that communication skills, teamwork and collaboration, time management skills, ability and readiness to learn, independently accomplishing tasks and self-management are the most essential skills for employees in both types of organizations to demonstrate their responsibilities and employers demand from secondary school graduates.

The results from observations of the work sites confirmed the responses obtained from employers and employees. That is, most of the (public and non-public) organizations required employees to complete tasks independently, communicate effectively with others, respect work time, cooperate and work with others, respect the rules and regulations the institutions (work ethics) and to demonstrate technical skills. There are two major positions assigned to employees graduated from secondary school: team/line leader and operator. Line/team leaders are required to demonstrate leadership skills, problem-solving skills and decision-making skills in addition to the skills expected from operators (in nonpublic organizations) or other employees (in public sectors). However, the study depicted that most of the novice employers didn't demonstrate most of the skills employers require from secondary school graduates. The skills employees faced difficulty to demonstrate during the first month of their employment are communication skills, appropriate and wise use of work time, self management skills (self control/work ethics),

independently accomplishing work, ability to work with others, ability to solve problems independently and ability to learn (adapt) to the work and its environment. Some of the operators promoted to team leader position faced challenges to exercise their responsibilities that are related to decision-making skills and problem-solving skills. Employers and employees claim that the association between secondary education (i.e., curriculum and instruction) and the actual work environments and the required work skills is feeble.

3. Relevance of secondary school curriculum vis-à-vis- the competencies required in the world of work

There is no clearly defined and identified philosophy of education and curriculum development model suggested to prepare secondary school curriculum. As a result, curriculum experts were not conscious about the philosophy and theories used to guide and design the curriculum in use. It was also identified that preparation of the textbooks were mainly managed by organizations that are external to Ministry of education. In addition, selection of textbook writers was in the hands of international or local organizations selected to prepare the materials. The study also revealed that the potential employers of secondary school graduates were not clearly defined and their participation in curriculum preparation process was not observed. Consequently, curriculum experts didn't feel confidence to conclude as the skills required in the world of work are adequately incorporated in the curriculum. Similarly, the users, teachers and students, were not satisfied with the level of integration of the skills in the textbooks. That is, the extent of integration of the required skills was not to the level it prepares students for the world of work. Though the space given for some of the skills categorized under cognitive and interpersonal domain of competencies was (relatively) not worse, the room provided in the curriculum for intrapersonal skills, practical skills, and creativity was insignificant.

The results from content analysis revealed that majority of the learning objectives and learning experiences (activities and exercises and end-of-unit-questions) included in secondary school textbooks do not encourage students to develop the work skills employers require from secondary school graduates. Majority of the competencies, activities, exercises and end-of-unit-questions are associated with the lower-level cognitive domains that have insignificant contribution for the development of the work skills. Moreover, the level of relevance of the learning objectives, activities, and review exercises and end-of-unit-questions integrated in the

different subjects or the same subject is not equal. The results obtained through content analysis realized that the number of activities that are relevant to the skills demand of the world of work is better than that of learning objectives and exercises and end-of-unit-questions. This does not mean that activities in the textbooks satisfied the expectations of the employers.

Among the cognitive skills expected to be achieved at secondary school level and employers demand from employees, critical thinking skills and problem-solving skills are relatively well represented as learning objectives in secondary school chemistry textbooks. Among interpersonal domains, analysis of chemistry textbook also revealed that the number of objectives reflecting teamwork and collaboration and communication skills is better than the other skills. However, intrapersonal domain of competencies is almost denied to be part of the learning objectives. The study identified that critical thinking skills, team work and communication skills are the most emphasized skills in the activities presented in chemistry textbooks. Students sometimes require problem-solving skills in doing activities included in chemistry textbooks. However, decision-making skills, creativity and intrapersonal skills didn't get adequate consideration by the subject curriculum experts or textbook writers while they were designing activities. Among the skills under question, critical thinking skill is the most emphasized skill in secondary school chemistry textbooks. Majority of the questions included in secondary school chemistry as exercises (in-text questions) and end-of-unit-questions demand the first two lower-level cognitive domains: simple memorization and comprehension of contents discussed in the textbooks. The number of question representing the required work skills is less than 10% of the total questions included in the textbooks. This implies that the number of questions designed to encourage students to develop the required work skills was insignificant.

The results of the study showed that majority (87.19%) of the competencies (objectives) in Biology textbooks seems prepared to encourage memorization and to get understanding of the concepts through reading the texts in the textbooks. Very few statements of objectives representing critical thinking skills and problem-solving skills are included in the textbooks. This confirms that the number of objectives associated with the skills demand of employers was insignificant. It was also identified that majority of the activities incorporated in Biology textbooks promotes the development of lower-level thinking domains. However, activities that are accepted as they are relevant to demand of the world of work have agreement with

communication skills, teamwork, and critical thinking skills. Critical thinking is the most emphasized among the skills included in Biology textbooks. The study also revealed that majority (>95%) of the review questions and end-of-unit-questions in secondary school Biology textbooks don't demand students to use or encourage them to develop the expected work skills. Most of the questions presented as exercises or end-of-unit-questions require students to remember the concepts discussed in the textbooks.

The result of analysis of secondary school Geography textbooks show that majority of statements of the objectives have no strong association with the skills secondary school graduates need for at workplace. Among the skills that are essential for employees, critical thinking skill is the most frequently reflected in the list of statements of learning objectives. Problem-solving skills, decision-making skills and communication skills are rarely represented in the list of objectives. Though most of the activities in Geography textbooks do not promote the mentioned work skills, there are activities planned to prepare students to develop critical thinking skills and problem-solving skills. Majority of the activities that are identified as they are designed to facilitate the development of critical thinking skills, problem-solving skills, teamwork and cooperation, and communication skills were addressed in geography textbooks. In addition, very few activities were used to promote time management skills, work ethics and creativity. Exercises and end-of-unit-questions in secondary school Geography is dominated by multiple choices and true/false questions that require students to remember or simple understanding of easily accessible information; do not encourage them to develop the required work skills. However, inconsiderable number of review questions require students to think critically, the ability to work with others, creativity and problem-solving skills.

The study depicted that considerable number of learning objectives that are associated with the required work skills is included in History textbooks. It was found out that 39%, 30%, 57.14% and 13.43% of the objectives listed in grade 9-12 (respectively) History textbooks have strong agreement with the required work skills. This does not mean that the number of learning objectives that are relevant with the required skills is to the level employers expecting from secondary schools graduates. Also, it was found out that the number of activities included in History textbooks is insignificant as compared to the other subjects. The results show that the number of activities and exercises and end-of-unit-questions in secondary school history

textbooks that have association with the skills demand of employers is not considerable. Majority of the activities, review questions and end-of-unit-questions encourage students to develop the first two lower-level cognitive skills; demand students to remember and understand previously learned contents or concepts discussed in the textbooks. There are few activities and questions that require students to think critically, to work in small groups and communication skills. In addition, the level of integration of creativity, decision-making skills, time management, problem-solving skills and self regulation in activities and exercises and end-of-unit-questions is not considerable.

4. Appropriateness of the pedagogical practice of the schools to provide students with relevant competencies

The results from classroom observations revealed that the instructional strategies employed in the majority of the classrooms were teacher-centered approach. It was realized that the instructional activities employed in the schools didn't allow students to analyze, synthesize and evaluate information and to draw their own conclusions and decisions. Students were forced to passively attend teachers' presentations and busy in taking notes from chalk board. They were not encouraged to demonstrate different roles and responsibilities so that they learn how to lead groups, reflect their views, work and cooperate with others, how to manage work and their time, and control their emotions. The activities students were provided during instructions do not require them to develop the skills employers demand from secondary school graduates. It was also identified that the instructional practices were focused on theoretical knowledge. The limited number of experiments and project works included in science (e.g., chemistry and Biology) textbooks that are designed to open some opportunities for students to practice basic technical skills and some of the cognitive skills and interpersonal skills were not realized in the actual classrooms because of different reasons. Lack or shortage of laboratory rooms, chemicals, equipments, laboratory technicians, water, and electricity are among the factors hindered realization of experiments listed in textbooks. Moreover, students were not offered the opportunity to observe industries and historical areas that enable them to acquire the expected work skills directly from the workplace.

The results obtained from analysis of data collected from teachers and students are not different from the data obtained through observations. The results show that majority of the instructional

approaches and techniques as well as instructional activities that are appropriate to encourage students to develop the required work skills were not implemented to the required level. It was confirmed that, in majority of the classrooms, most of the activities and instructional time allocated for one period/session (40' or 45') was used by the teachers. That is, teachers used more than sixty percent (>25 minutes) of the instructional time to lecture and write note on the chalk board. The results show that the instructional activities employed in the schools did not require students to think critically, make their own conclusions, generate innovative ideas, solve problems individually and with other students, work in small groups and practice how to manage activities, groups and time, prepare written report and present to class, supervise and give feedback to other's work. This implies that the design and delivery of the instructional activities employed in the secondary schools were not to prepare students for work.

The assessment techniques that have been used in the schools were mainly to measure content-based students' performances that have insignificant association with the development and enhancement of competencies required in the world of work. The schools mostly employed paper and pencil examinations. Written report and oral presentations and the tools that are appropriate to evaluate students' performance through demonstration were not evident in the schools. It was reported that students were not given the opportunities to evaluate performances of their peers and give feedback. The study revealed that availability of instructional materials and conduciveness of the school environment were not to the level it encourage students' learning and the development of the work skills. Though the number of teachers and school principals who satisfy the minimum requirements of the level was high, observations conducted in the classrooms and outside classrooms (in-side the schools) depicted that the schools were not managing the instructional activities in the way that it equip students with the required work skills.

5. Alignment between the education policy, secondary school curriculum, and teaching-learning process - to prepare students for the world of work

The central point to evaluate coherence between the three elements was the spaced accorded 'preparation for work' in the education policy document, secondary school curriculum, and instruction. The results of the study show that the concern of education policy is translated to the curriculum frame work to some extent. That is, the goal of secondary education and the key

competencies presented in the curriculum framework are in line with the aim and objectives of education mentioned in the education policy document. Majority of the competencies and most of the skills employers demand from secondary school graduates are listed in the curriculum framework. However, the skills to be attained at specific grade level (for instance; secondary school) are not clearly indicated in both documents. The results of analysis of the documents and the actual pedagogical practices of the schools revealed that alignment between education policy and the curriculum framework, the coherence between the policy or curriculum framework and secondary school curriculum or pedagogical practices and the alignment between secondary school curriculum and the actual classroom instruction was not strong - to prepare students for work.

Regarding the internal consistency among the issues discussed in the elements of the education policy document, it was depicted that the education structure is not in line with the aim of education- to enable students make all-rounded participation. The education structure favors only those who are interested to attend the next level of education; it has no adequate room for student who are interested to join the world of work immediately after secondary education. The tracks/ streams the education system allows to have at secondary school level do not serve the two purposes of secondary education equally. This reveals that the consistency among the different sections of the policy document is not strong. Similarly, the study confirmed that the there is no strong coherence between the different parts of the curriculum framework. The results of analysis of the curriculum structure and the identified learning areas revealed that secondary education was planned to serve only one of the purposes of secondary education; mainly to prepare students for further education. This indicates that adequate space was not provided for the intention to prepare students for work. Lack of consistency among the issues presented under the different parts of the policy document and the different sections of curriculum framework is confirmed.

The findings of the study revealed that the learning objectives and curriculum experiences included in secondary school textbooks do not encourage students to get prepared for the various destinations of students after completion of secondary education. More specifically, the space provided in secondary school curriculum for the skills required in the world of work was not adequate to prepare students for work. This shows that the alignment between the concern of the

policy or curriculum framework and secondary school curriculum (e.g., learning objectives, activities and exercises and end-of-unit-questions) was not strong enough to realize the aim to prepare students for work. Moreover, the association between the aim of education indicated in the policy document or the goal of secondary education stated in the curriculum framework and pedagogical practices of the skills was extremely poor. The instructional activities performed in the schools encourage students to listen to and receive the readymade information from the teachers. Although majority of the curriculum experiences in secondary school textbooks don't encourage students to develop the required skills, it was also learned that there are experiments and project works that are designed to encourage students to visit organizations or areas where they can get first hand experiences and develop positive attitude towards work and the expected work habits. However, the study revealed that students did not get the opportunity to visit the areas and develop the expected work skills. The results from classroom observations also confirmed that pedagogical practices of the schools didn't facilitate the achievement of the work skills. This shows that the instructional activities employed in the schools were not in line with the intent of the curriculum framework- to prepare students for work. Thus, the alignment between the education policy, curriculum framework, curriculum/textbooks and pedagogical practices of the schools was not strong enough to prepare students for work.

5.2 Conclusions

On the basis of the findings of the study, the following conclusions are made.

As indicated in the policy document, one of the purposes of education is to prepare students for work. However, it is concluded that the (1994) Education policy document is not strong and sufficient to guide the subsequent documents and the processes to prepare students for work. The emphasis given to preparation for work and the skills demand of employers in the different parts of the policy document are not to level it gives clear direction for curriculum designers and experts to identify and integrate the work skills in secondary school curriculum. The structure of education presented in the policy document does not allow curriculum planners and secondary schools to have different types of schools and alternative curriculum structure that enable students to get prepared for the different destinations including the world of work. Hence, this study confirmed that the policy guide the schools (directly or indirectly) to have the 'one-size-fits-all' curriculum structure which encourages experts and schools to give priority to preparation

for higher education. Lack of coherence among the different parts of the document regarding preparation for work and the skills students need for future career is one of the factors minimized the efforts made to improve relevance of secondary education to the skills demand of employers. Moreover, since the education system does not suggests multiple tracks/streams and different types curriculum at secondary schools level, students were forced to think only about one destinations (i.e., higher education) without considering their interest and capabilities.

Though preparation for work is mentioned as one among the goals of secondary education, based on the evidences extracted from the policy documents, curriculum framework, respondents and the actual school seating, it is concluded that the structure of education and secondary school curriculum structure are not organized in the way it provide sufficient space for the skills that allow students to get prepared for work. The identified learning areas and the structure of the curriculum don't fit the needs of those who are interested to join the world of work immediately after secondary education. The study concluded that the different destinations students will join after secondary education other than the next level of education are denied by the key stakeholders. Preparation for further education is perceived as the major purpose of secondary education and the other officially proclaimed goal of secondary education, preparation for work, is not well understood by curriculum makers and users. Effectiveness of students' and schools' are associated with students' national examinations results. Consequently, it is concluded that the experts and educators were not ready to prepare curriculum and deliver instructions that are relevant to prepare students for work.

The work skills employers demand from secondary school graduates are similar to the skills that are recognized as essential for the organizations and employers in the other parts of the globe. Though, they are not equally important for the same organization or for different sectors, none of the skills are not important for employees and for employers of secondary schools graduates. Based on the results, it is concluded that employers do not require job specific skills from secondary school graduates. The major demand of the employers is the work skills that are identified as essential for secondary school graduates to become successful in the world of work. Communication skills, teamwork and cooperation, time management skills, the ability to work independently, self management skills, and ability and readiness to learn and adapt to the work environment are the most important skills for all employers. Critical thinking skills, problem-

solving skills, decision-making skills and creativity are not among the most essential skills for employees graduated from secondary schools. However, secondary schools were not preparing students who are destined to the world of work immediately after secondary education. As a result, majority of the beginner employees faced difficulty to effectively demonstrate the mentioned skills. The study confirmed that that there is a gap between the skills demand of the world of work and the knowledge and skills secondary schools have been providing students. Hence, it is possible to infer that secondary education had not been equipping students with the skills employers expecting from secondary school graduates.

The study concluded that secondary school curriculum is not relevant to the skills demand of the world of work. None of the elements of secondary school curriculum materials (textbooks), such as learning objectives, activities, exercises and end-of-unit-questions has strong association with the skills needed to prepare students for work. The curriculum was prepared to provide students with theoretical knowledge and lower-level cognitive skills that have no considerable contribution to prepare secondary school students for work. Thus, it is safe to conclude that the space accorded 'preparation for work' in secondary school curriculum is not to the level it enables the schools to prepare students for work. The knowledge and skills essential to prepare curriculum which is relevant to the world of work were not demonstrated during secondary school curriculum designing and/or textbook preparation. In addition, the study concluded that the room provided for theoretical knowledge and practical skills or the behaviors and skills that are essential in the world of work are not balanced; the curriculum in use is theory-oriented. In addition, the balance between the different domains of competencies that are essential for work (i.e., cognitive, interpersonal and intrapersonal) is not maintained in the curriculum. The potential employers of secondary education graduates weren't clearly defined and their involvement in the curriculum development process wasn't confirmed. As a result, the needs and expectations of employers of secondary school graduates were not addressed in the curriculum to the required level. Consequently, students have been leaving secondary schools without the skills that are essential to succeed in the work world.

The study confirmed that constructivist view of learning/philosophy and student-centered approach that are suggested to prepare relevant secondary school curriculum and to deliver lessons accordingly were ignored during textbook preparation and classroom instructions. Hence,

it is concluded that teacher-centered instructional approaches that have no significant role to encourage students develop the required work skills was the dominant strategy employed in the schools. That is, most of the instructional time was used to lecture the class and the teachers dominated the sessions with the instructional activities that do not help students to develop the skills and attitudes required in the world of work. Hence, it is possible to conclude that the space accorded 'preparation for work' in secondary schools instruction was not sufficient to prepare students for work and to encourage them develop the skills that are essential to become effective workforce.

The study concluded that the alignment between the education policy, curriculum framework, secondary school curriculum and instruction with reference to the skills demand of the world of work is not strong. The extent to which the skills are integrated in the policy document, curriculum framework, curriculum and instruction is also varies. It was also confirmed that the strength of the bond aligning the different parts of the education policy and within the curriculum framework document regarding the work skills employers require from secondary school graduates is weak. Though the key competencies that are mentioned in the curriculum framework are essential for students' future life, education and work, the curriculum structure and learning areas identified to be learned at secondary school level do not realize the attainment of the goal to prepare students for work. In addition, the education system/structure indicated in the policy document does not support the schools to realize the aim to prepare students for work and to equip them with the key competencies suggested to prepare students for work. Similarly, the alignment between the learning areas and the curriculum structure presented in the curriculum framework and the goal of secondary education mentioned in the same document is weak. Hence, it is concluded that lack of strong internal consistency in the policy document and curriculum framework and their alignment with the curriculum and instruction was among the factors hindering realization of the aim to prepare students for of work.

The policy documents give equal recognition for both goals of secondary education: preparation for work and for higher education. However, secondary school curriculum and instruction did not give sufficient space for preparation for work. This implies that the different elements of secondary school curriculum and pedagogical practices of the schools were not in line with the goals to prepare students for work and the key competencies mentioned in the curriculum

framework and the skills demand of employers. Based on these results, it was confirmed that the coherence between the intention of the policy or curriculum framework and the curriculum as well as the alignment between pedagogical practices of the school and the goal to prepare students for the world of work was not strong. Thus, it can be concluded that the alignment between the education policy, secondary school curriculum and pedagogical practices of the schools is not strong enough to prepare students for work.

5.3 Implications for Theory, Practice, Policy and Research

Based on the findings and conclusions made, the following implications are forwarded.

Theoretical Implications

The assumptions of the study are drawn from system theory and constructivist theory that guided theoretical framework of the study. A system is a set of interrelated but independent elements organized to achieve an intended goal. System theory suggested that each unit and sub-unit of a system play independent roles that contribute to attainment of the intended goal. Preparation for work is among the aims of education in general and goals of secondary school in particular. One among the assumptions of the study is that the policy documents are relevant and sufficient to guide the subsequent documents and activities emanated from the policy to realize the indentified purpose. The findings of the study partially supported the assumption that the policy document is sufficient and committed to mention the work skills that are essential to prepare students for work. Although some of the skills required in the world of work are listed in the documents, the alignment among sub-sections of the policy documents found weak to realize the intended goal. The education system and curriculum structure narrowed the space that allows the schools and the curriculum to prepare students for different destinations including the world of work. The findings related to relevance of the policy documents to guide the aim to prepare students for work do not support the assumption being mentioned. The education system/structure and curriculum structure that are part of the policy documents need to permit the school and students to have alternative types of schools and curriculum allow the system to prepare students for various destinations. Lack of coherence among the different elements of a system reduces the effort to prepare students for work and other destinations. To effectively serve interests of students and demands of the world of work, MoE need to build a system and sub-systems that are interconnected and work independently towards the common goal.

Once the policy has been formulated it will be communicated to and implemented by users. In other words, practitioners who are working at the different levels of a system need to have understandings of the issue introduced to achieve certain goal. The findings of the study do not supported the assumption that all key stakeholders are aware of the purpose to prepare secondary school students for work. Educators and students believed that the main purpose of secondary education is to prepare students for further education and examinations that determine the next destinations of students. They were not conscious about the mission of secondary education to prepare students for work and the skills the world of work demand from secondary school graduates. Participatory policy formulation and continuous awareness creation for the late comers to the sector bring all the stakeholders on the same page and enhance the attainment of the goal.

System theory suggests that all major and sub-units of a system should be sufficient to deliver the expected roles in line with the goal of the system. In education context, curriculum which is counted among the major elements of education system should offer students with the skills needed to prepare students for work. This demand curriculum experts and textbook writers to prepare curriculum which is relevant to demands of employers of secondary school graduates. The findings of the current study are not consistent with the assumption that all units of a system are qualified to demonstrate their responsibilities. The work skills secondary school graduates need for future career is not integrated in secondary school curriculum to the level employers expect from the workforce. Employers argued that secondary school graduates have been facing difficulty to demonstrate the required work skills during the early days of their employment. If participatory curriculum development approach is implemented, schools will have curriculum which is relevant to demands of the internal and external customers. Besides, preparation of curriculum which is relevant to demands employers requires those who involve in curriculum development process (e.g., curriculum planners and textbook writers) relevant knowledge, skills and experiences.

Constructivism is a learner centered educational philosophy grounded on the assumption that learners construct their own meaning through active engagement. Constructivists assume that students acquire and develop the skills that are essential to be successful in the world of work when student-centered approach is emphasized during curriculum development and classroom

instruction. The findings of the study are not in line with this assumption. The study confirmed that curriculum in use and pedagogical practices of the schools were dominated by traditional teacher-centered approach. The different parts of secondary school textbooks and instructional activities employed in the schools did not encourage students to be engaged with activities that help them to develop the required work skills. Competency-based education enable curriculum planners to identify competencies and skills students need to become effective in the world of work. Attainment of the skills and competencies demand textbook writers and teachers to apply the philosophies of education and theories of learning that enable them to use student-centered approach.

Methodological Implications

The most important methodological implication of this study is the attempt to simultaneously examine the skills demand of employers and the skills secondary education has been offering students. This type of methodological practice has significant importance to uncover the gap between the schools and users of the output of the system. This study employed comprehensive and multi-directional strategy to critically examine data collected from employees, employers, teachers and student's self-report, classroom and outside classroom (inside school) observations and the different sections of the textbooks. Most of the previous studies tried to evaluate relevance of education focusing on curriculum without considering pedagogical issues. This study did not limit its scope only to one side of education, curriculum or instruction. Results obtained from the half side of a system do not show the real picture of the problem. The intention of the policy (aim of education), contents of the materials prepared to realize the goal (curriculum) and the actual implementation (instruction) are equally important to devise solution to the problem under investigation.

Most of the previous research works used questionnaire and interview to collect data from respondents in the education sector to evaluate relevance of education. The current study employed in-depth content analysis of MoE documents and students textbooks in addition to the usual tool, questionnaire. In-depth interviews were also conducted with the most important but not addressed informants, namely, employees and employers of secondary schools graduates to make visible the real demand of the workplaces. These methodological strategies have considerable contribution to identify the skills demand of workplaces and the gaps between

secondary education and the work environments that are open for secondary school graduates. Furthermore, inclusion of the work environment to understand the context would help to explain the real expectation of the organizations that have hired secondary school graduates.

Implication for Practice

The results of the study show that involvement of key stakeholders in secondary school curriculum planning or revision was not to the required level. The need to ensure involvement of experts, implementers (users) and external customers in curriculum development process is among the practices required to enhance relevance of the curriculum. Employers have irreplaceable role in the process of making curriculum which is relevant to the world of work. If the concern is to prepare curriculum which is appropriate to equip students with the required skills, there should be strong link between organizations that have employed secondary school graduates and MoE and schools. The role of professional curriculum specialists, teachers, subject curriculum experts and textbook writers who have relevant knowledge, skills and experiences in the areas of curriculum development is also vital to prepare relevant curriculum.

The need to incorporate demands of the various destinations of graduates including the needs of employers is significant to provide adequate space for 'preparation for work' in secondary school curriculum. To prepare curriculum that could serve the interests of the internal (i.e., students) and external consumers of the output of secondary education (i.e., employers), it is equally important to assess the needs of students and employers of secondary school graduates. In order to prepare a curriculum which is responsive to demands of users of the outputs of secondary schools, subject curriculum experts and textbook writers are required to be aware of the entire purposes of secondary education: preparation for work and the next level of education. Philosophical foundations of education, philosophies of education, theories of learning and instruction are among the most crucial areas of knowledge curriculum designers and textbook writers should have to prepare curriculum which is relevant to the intended purpose.

The results of the study revealed that the curriculum and pedagogical practices of the schools were not in line with the purpose to produce skilled workforce. The decision made to transfer management of textbook preparation to the selected local or international organizations was considered among the factors affected relevance of secondary education. One of the issues need to be revised to improve relevance of education of the country is the criteria and procedure

employed to assign or select curriculum makers and textbook writers. Revising these issues will bring textbook writers and curriculum experts who have adequate knowledge of the subject matter, theories and philosophies and skills that are essential to prepare relevant curriculum to the position. In place of allowing international and local business oriented organizations to prepare curriculum materials, it is advisable to organize independent institution composed of experts from different disciplines including subject curriculum experts and curriculum specialists who are responsible to consistently and independently manage all curriculum development and implementation processes.

The need to deliver interactive instructional approaches is considered as one of the strategies to improve relevance of pedagogical practices of the schools. This demands schools to have adequate instructional resources, conducive learning environment, teachers who are resourceful and capable to apply the various instructional strategies and knowledgeable and committed school principals. The understanding of the purpose of secondary education to prepare students for work and the other alternative destinations of students immediately after secondary school is equally important for school principals and teachers. In order to deliver instruction that could encourage students to develop the required work skills, teachers are not only required to have sufficient understanding of the goal of secondary education and subject matter knowledge but also the knowledge, attitudes and skills required to prepare curriculum and deliver instruction that are responsive to the entire purpose of secondary education. The knowledge of the skills demand of employers and the way to integrate the skills with academic contents during instruction enable teachers to effectively demonstrate their responsibilities.

Implications for Future Research

The aim of the current study is to investigate the space accorded ‘preparation for work’ in secondary school curriculum and instruction with overall aim to evaluate relevance of secondary education to the world of work. One among the concern of future studies could be relevance of secondary education to the next level of education as well as the balance among the expectations of the different specialization areas higher education institutions are offering from secondary school curriculum and instruction. The study was examined secondary schools without making any categorization considering geographical location, administration factors, urban/rural schools or the age or facilities of the schools. Hence, one of the areas of future studies could be

comparative study on pedagogical practices of public and non-public secondary schools to prepare students for work or other destinations.

The current study focused on the skills demand employers in Ethiopia. Thus, future studies need to investigate relevance of the education to the skills demand of employers in Africa or some selected countries that have employed secondary school graduates of the country, Ethiopia. Conducting comparative analysis of secondary school curriculum materials (e.g., textbooks) used during different regimes or time using preparation for work or for higher education as a central theme may help the country to identify the progress or restoration of the curriculum from time to time.

Policy Recommendations

The continuous change in science, technology, politics and economy demands education sectors in general and policy makers and curriculum planers in particular to re-think and revise the current education system and curriculum structure that limits secondary schools to have only one track and prepare students for a single and predicted goal. This demand policy maker to devise strategies that could open many doors for students to enable them decides their future destination among the diverse tracks based on their interests and capabilities. Hence, it is appropriate to introduce alternative school types and various education paths that enable students to get prepared for different destinations including the world of work immediately after secondary education or for the different areas of specialized at higher education institutions. Increasing permeability across the different streams and tracks so that students can move from one track to the other depending on their interests and requirements of the streams is among the expectations from the future education policy.

The concern to realize the aim to prepare students for work requires identifying and clearly defining the potential employers of secondary school graduates. The major categories of competencies and skills employers demand from secondary school graduates and the level of education at which students ought to learn the skills that are essential to get prepared for the world of work need to be clearly specified in the policy documents. The need to revise the curriculum in use so that the key competencies and skills students need for work are adequately integrated in the curriculum elements, namely, learning objectives, review activities and exercises and end-of-unit-questions expected to be the major task of the education sector.

References

Aarskog, E., Barker, D., & Borgen, J. S. (2019). What were you thinking? A methodological approach for exploring decision-making and learning in physical education. *Sport, Education and Society*, 24(8), 828-840.

Ahmad, C. N., & Amiru, N. J. (2017). The effect of the physical learning environment on students' health, enjoyment and learning. *Journal Pendinikan Sain and Mathematics* Malaysia, 7 (1), 47-55.

Akram, M. (2012). Formal education, skill development and vocationalisation: The missing link. *Research on Humanities and Social Sciences*, 2 (8), 142-148.

Albrecht, J., & Karabenick, S. (2018) Relevance for Learning and Motivation in Education. *The Journal of Experimental Education*, 86(1), 1-10.

Alemayehu, B., & Lasser, J. (2012). Education in Ethiopia: Past, present and future prospects. *African Nebula,* Issue 5.

Alina, M. Z., Michael, D. M., Kim, Y., & Jack, W. (2018). Design of assignments using the 21st century Bloom's revised taxonomy model for development of critical thinking skills. *Problems and Perspectives in Management,* 16(2), 291-305.

Alismail, H. A., & McGuire, P. (2015). 21st century standards and curriculum: current researchand practice. *Journal of Education and Practice,* 6 (6), 150-154.

Alsubaie, M. A. (2016). Curriculum development: Teacher involvement in curriculum development. *Journal of Education and Practice,* 7 (9), 106-107.

Alufohai, P. J., & Akinlosotu, T. N. (2016). Knowledge and attitude of secondary school teachers towards continuous assessment practices in Esan central senatorial district of Edo State. *Journal of Education and Practice,* 10(7), 71-79.

Amadio, M. (2013). *A rapid assessment of curricula for general education focusing on cross-curricular themes and generic competences or skills*. UNESCO-IBE, Geneva.

Amare, A., Ambissa, K., Dawi, A., Dereje, A., Tesfaye, S., & Yekoyealem, D. (2016). *Ethiopian education roadmap 2017-2030: Desk Review of secondary and preparatory education.* Education Strategy Center, MoE.

Angeles, M. (2012). Teaching efficacy, interpersonal, intrapersonal skills and teaching performance in the tertiary school. *International Journal of Social Science*, 2(1), 17-23.

Armstrong, L. (2020). *Secondary Education in Africa: Preparing Youth for the Future of Work, Mastercard Foundation*. https://doi.org/10.15868/socialsector.35972.

AW, C., & Mariro, A, (2001). *Secondary education in sub-saharan Africa: Summary of the diagnosis and forward thinking*. UNESCO-BREDA. Available At: www.unesdoc.unesco.org/images/0013/001354/135409eo.pdf.

Awofala, A. O. & Babajide, V. F. (2013). Examining attitude towards continuous assessment practices among Nigerian pre-service STM Teachers. *Journal of Education and Practice,* 4(13), 37-49.

Babbie, E. R. (2016). *The practice of social research (*14th Edition). Boston, MA: Cengage Learning.

Bainton, D., Barrett, A., & Tikly, L. (2016). *Improving Secondary school teacher quality in sub-saharan Africa* (No. 3; Bristol Working Papers in Education). University of Bristol.

Ball, A., Joyce, H., & Butcher, D. A. (2016). Exploring 21st century skills and learning environments for middle school youth. *International Journal of School Social Work*: 1(1), 1-15.

Banathy, B. H. (2000). The evolution of systems inquiry. Paper presented at the 1st International Electronic Seminar on Wholeness, *International Society for the Systems Sciences*. Available at: www.newciv.org/ISSS Seminaronwholeness.html.

Barrett, A. M. (2017). Making secondary education relevant for all: reflections on science education in expanding sub-sector: Compare: *Journal of Comparative and International Education,* 47(6), 962-978.

Barrett, A. M. & Tikly, L. (2012). *Quality in Education from an international perspective*. Bristol: EdQual.

Bell, J. (2004). *Doing your research project: A guide for first-time researchers in education and social sciences* (3rd ed.). New York: Open University Press.

Berhe Mekonnen & Tsegay Gebrekidan (2018). *The state, determinants, and consequences of skills mismatch in the Ethiopian labour market. Working papare 021,* The Ethiopian Policy Study Iinstitute.

Barron, B., & Darling-Hammond, L. (2008). *Teaching for meaningful learning: A review of research on inquiry-based and cooperative learning (PDF). Powerful Learning: What We Know About Teaching for Understanding.* San Francisco, CA: Jossey-Bass.

Behrendt, M., & Franklin, T. (2014). A review of research on school field trips and their value in education. *A Review of Research on School Field Trips and Their Value in Education,* 9(3), 235-245.

Binayew , T., & Tadele , M. (2016). Education System that forgot the unforgettable values: The case of Ethiopian education, 1941-1991. *The Ethiopian Journal of Science and Sustainable Development (EJSSD), 3(1), 85- 103.*

Blomeke, S., & Delaney, S. (2012). Assessment of teacher knowledge across countries: A review of the state of research. *ZDM Mathematics Education,* 44(3), 223-247.

Blom, A., Cao, X., Andriamihamina, H., & Akinlawon, I. (2017). *Job-ready graduates of eecondary Education in Botswana, Lesotho and Zambia:* Reforming instruction, *curriculum, assessment, and structure to teach vocational and 21st century skills*. Washington, DC: The World Bank Group.

Blumberg, P. (2007). Problem-based learning: a prototypical example of learning-centered teaching. *Journal of Student Centered Learning*, 3 (2), 111-125.

Borghans, L., Weel, B., & Weinberg, B. (2014). People skills and the labor-market outcomes of underrepresented groups. *Industrial & Labor Relations Review, 67(2),* 287 - 334.

Borich, G. D. (2017). *Effective teaching methods: Research-based practice (9th edition).* University of Texas, Austin: Pearson Education.

Brewer, B. (2013). *Enhancing youth employability: What? Why? and How?: Guide to core work skills.* Geneva: International Labour Organization , Skills and Employability Department.

Brookfield, S. D. (2012). *Teaching for critical thinking, tools and techniques to help students question their questions.* A Wiley Imprint. Jossey-Bass. San Francisco, CA.

Brooks, C. (2012). Space and consequences: The impact of different formal learning spaces on instructor and student behavior. *Journal of Learning Spaces,* 1(2), 1-9.

Brown, T. L. (2004). Teachers' conceptions of assessment: implications for policy and professional development. *Journal of Assessment in Education, 11* (3), 305-322.

Brundrett, M., & Lungka, P. (2019). The development of teachers' knowledge and behavior in promoting self-discipline: a study of early years teachers in Thailand. *Education, 47*(4), 462-474.

Burnett, N., & Jayaram, S. (2012). *Innovative Secondary Education for Skills Enhancement: Skills for Employability in Africa and Asia.* Results for Development Institute.

Buzzelli, C. A. (2015). The capabilities approach: Rethinking agency, freedom, and capital in early education. *Contemporary Issues in Early Childhood*, 16(3) 203-213.

Cai, J., & Howson, G. (2013). Toward an international mathematics curriculum. In M. Clements et al.(Eds.), *Third International Handbook of Mathematics Education* (pp. pp 949-974). New York: Springer Science.

Care, E., & Luo, R. (2016). *Assessement of trasversal competencies; Policy and practice in Asia-Pacific region*. France: UNESCO.

Carl, A. (2009). Teacher *empowerment through curriculum development theory into practice*. Juta & Company Ltd.

Carl, A. E. (2012). *Empowerment through Curriculum Development: Theory into Practice.* Kenwyn: Juta & Company Ltd.

Case, B. J., Jorgenson, M. A., & Zucker, S. (2004). *Alignment in educational assessment*. New Jersey: Pearson education.

Chalkiadaki, A. (2018). A systematic literature review of 21st Century Skills and competencies in primary education. *International Journal of Instruction,* 11(3), 1–16.

Chisholm, L., & Leyendecker, R. (2008). Curriculum reform in post-1990s sub-Saharan Africa. *International Journal of Educational Development,* 28(2), 195-205.

Chu, S., Reynolds, R., Tavares, N., Notari. M., & Lee, C. (2017). *21st-century skills development through inquiry-based learning*. Singapore: Springer.

Cogill, J. (2008). *Pedagogy and models of teacher knowledge*. Retrived from: http://juliecogill.com/Chapter_2.pdf.

Cohen, J. (2006). Social, emotional, ethical and academic education: Creating a climate for learning, participation in democracy and well-being. *Harvard Educational Review, 76 (2),* 201-237.

Cohen, J. (2006). Goals of universal basic and secondary education. *Prospects,* 36(3), 247-269.

Cohen, L., Mannion, L. & Morrison, K. (2018). *Research methods in education (8th ed.).* New York: Routledge.

Colby, J. (2000). Defining quality in education. W*orking paper series, education section.* New York, USA: UNICEF.

Colby, J. (2000). Learning outcomes in international context. *Paper presented at the Annual Meeting of the Comparative and International Education Society.* San Antonio, Texas.

Clandinin, D. J., & Connelly, F. M. (2009). *Teachers as curriculum planners: Narratives of experience*. New York: Teachers College Press.

Cotton, K. (2006). School climate and students performance. *School improvement research.* 20, 49-75. http://www.edu/center/schoolclimate/schoolimprovement.html.

Cresswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed approaches*. LosAngeles. CA, Sage.

Creswell, J. W., & Clark, V. L. (2011). *Designing and conducting mixed methods research (2nd ed.)*. Thousand Oaks, CA: Sage Publications, Inc.

Creswell, J. W. & Creswell, J. D. (2017). *Research design: qualitative, quantitative and mixed methods approach*. Los Angeles: Sage.

Curry, L. (2017). Implementing competency based education. *Collecting Essay on Learning and Teaching*, 10(1), 61-73.

Dagsvik, J. K. (2012). Making Sen's capability approach operational. *A random scale framework, Discussion Papers,* No. 710, Statistics Norway, Research Department, Oslo

Davies, D., Jindal-Snape, D., Collier, C., Digby, R., Hay, P., & Howe, A. (2013). Creative learning environments in education: A systematic literature review. *Thinking Skills and Creativity,* 8(1), 80-91.

Drake, S., & Reid , J. (2018). Integrated curriculum as an effective way to teach 21st century capabilities. *Asia Pacific Journal of Educational Research,* 1(1), 31-50

Education Development Center (EDC) (2018). *Ethiopia labor market assessment report*. Education development center, Inc. Retrived from: http/www.careevaluations.org

EDUFI. (2017). *Finnish education in a nutshell*: *Education System in Finland.* Minstry of Education and Culture Finland. https://www.oph.fi/ download/146428_Finnish_Education_in_a_Nutshell.pdf.

Elliott, S., Cook, L., & Travers, F. (2000). *Educational psychology: effective teaching effective learning* (3rd e.d.). Boston M: McGrew.

Enyedy, N., & Stevens, R. (2014). *Analyzing collaboration: The Cambridge handbook of the learning sciences (second edition)*. Cambridge, UK: Cambridge University Press.

Erawan, P. (2010). Developing life skills scale for high school students through mixed methods research. *European Journal of Scientific Research,* 47(2), 169-186.

Esther, C., Helyn. K., Alvin, V., & Kate, A. (2018). *Education system alignment for 21st century skills: Focus on assessment.* Singapore: Springer Nature.

Eubanks, D., & Eubanks, L. T. (2009). The importance of secondary education. In N. P. Tarasova (Ed.), *Quality of Human Resources: Education* (Volume II). EOLSS Publications.

Evans, G. (2006). Child development and the physical environment. *Annual Review of Psychology*, 57,423-451.

Evans, D., & Acosta, A. (2020). Education in Africa: What are we learning? *Journal of African Economics*, 30(1), 13-54.

Fajaryati, N., Akhyar, M., & Wiranto, B. (2020). The employability skills needed to face the demands of work in the future: Systematic literature reviews. *Open Engineering,* 10(1), 595-603

Fard, H. D. (2012). Research paradigm in public administration. *International Journal of Humanities,* 19 (4): 55-108.

Fassil, R. (1990). *Implementing educational policies in Ethiopia*: World Bank discussion papers Africa technical department series. Washington, DC: The World Bank.

Feilzer, M. Y. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research,* 4 (1), 6-16.

Fidler, L. (2017). An Overview about the Germany Education System. *Social Education,* 45(1), 104-107.

Fisser, P., & Thijs, A. (2015). *Integration of 21st century skills into the curriculum of primary and secondary education.* Las Vegas, NV, United States.

Fox, J., Hughes, S., & Murphy, V. (2017). A review of the benefits, challenges and steps towards imple menting authentic assessment. *AISHE-J*, 9(3), 3231–3243.

Fredriksson, U. (2004). Quality of secondary education: The key tole of Teacher. *Education International Working Papers*. https://doi.org/10.1080/2331186X.2023.2188978.

Fried, B. D., and Allen, K. M. (2014). *System theory: Frameworks for clinkical practice*. Retrived from: https://www.researchgate.net/publication/266615989.

Frost, M., & Rolleston, C. (2013). *Improving education quality, equity and access: a report on findings from the young lives school survey (round 1) in Ethiopia.* UK: Young Lives.

Fullan, M. (2013). *Great to excellent: Launching the next stage of Ontario's education agenda.* Toronto: Ontario Ministry of Education.

Fullan, M., & Scott, G. (2014). *New pedagogies for deep learning whitepaper: Education PLUS*. Seattle: Collaborative Impact SPC.

Gallagher, C., Hipkins, R., & Zohar, A. (2012). Positioning thinking within national curriculum and assessment systems: Perspectives from Israel, New Zealand and Norhtern Ireland. *Thinking Skills and Creativity,* 7(2), 134-143.

Gervais, J. (2016). The operational definition of competency-based education. *The Journal of Competency-Based Education* , 1(2), 98-106.

Gervey, R., Drout, M., & Wang, C. (2009). Debate in the classroom: An evaluation of a critical thinking teaching technique within a rehabilitation counseling course. *Rehabilitation Education,* 23(1), 61-73.

Ghaicha, A. (2016). Theoretical framework for educational assessment: A Synoptic Review. *Journal of Education and Practice,* 7(24), 212-231.

Gillies, R. M. (2016). Cooperative learning: Review of research and practice. Australian Journal of Teacher Education, 41(3), 39-54.

Glaittli, M. (2018). *Soft skills in high School.* Unpublished PhD Dissertation: Arizona State University.

Grant, C. (2017). The contribution of education to economic growth. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.

Greenstein, L. (2012). *Assessing 21st century skills: A guide to evaluating mastery and authentic learning.* Corwin Press.

Grimmer, L. (2022). The Relationship between Secondary Education and Economic Growth in Sub-Saharan Africa: A Review of the Literature. *Cambridge Educational Research e-Jounal*, 9(1), 299-309.

Gronlund, N. E. (2006). *Assessment of student achievement (8th ed.).* Boston: Pearson.

Hagger, M. S., and Hamilton, K. (2018). Grit and self-discipline as predictors of effort and academic attainment. *British Journal of Educational Psychology*, *89*(2), 324–342.

Hamilton, K. (2018). Grit and self-discipline as predictors of effort and academic attainment. *British Journal of Educational Psychology*, *89*(2), 324-342.

Harris, E. (2017). How can teachers put Competency-Based Curricula into practice? *Journal of Initial Teacher Inquiry*, 3(1), 12-15.

Higgs, P., & Smith, J. (2006). *Rethinking our world (2nd ed.).* Juta: Cape Town, JUTA & Company Ltd.

Hilton, M. (2015). Preparing students for life and work. *Issues I Science and Technology*, 31(4), 64.

Hofstein, A. (2017). The role of laboratory in science teaching and learning. In: Taber, K.S., & Akpan, B. (Eds.), *Science Education*, (pp357-368). Rotterdam: Sense.

Hounsell, D. (2007). Towards more sustainable feedback to students. In: Boud D, Falchilov N (eds) Rethinking assessment in higher education. *Learning for the longer term* (pp 101 113). Routledge, London.

Hurrell, S. (2016). Rethinking the soft skills deficit blame game: Employers, skills withdrawal and the reporting of soft skills gaps. *Human Relations, 69(1)*, 605- 628.

International Labour Organization. (2016). *Key indicators of the labour Market (9th edition).* Geneva: International Labour Organization. http://www.ifrro.org.

Jacob, W., & Lehner, S. (2011). *Secondray education:* A g*uides to education project design based on comprehensive literature and project reviews*. The EQUIP2 State-of-the-Art Knowledge, USAID.

Jacobs, M., Vakalisa, N., & Gawe, N. (2011). *Teaching-learning dynamics* (4th ed). Cape Town: Pearson.

Jain, C., & Prasad, N. (2018). *Quality of eecondary education in India*. Singapore: Springer.

Jidamva, G. (2012). *Understanding and improving the quality of secondary school education*. Tanzania: Abo AKademy University.

Johnson, B., & Christensen, L. (2012). *Educational research: Quantitative, qualitative, and mixed approaches* (4th ed.). Los Angeles: SAGE Publications.

Johannes, G. (2018). Educational justice: equality versus adequacy. In: Peters, Michael A. *Encyclopedia of educational philosophy and theory*, (pp1-5), Cham, Switzerland: Springer.

Johnstone, S. M., & Soares, L. (2014). Principles for developing competency-based education programs. *Change*, 46(2), 12-19.

Joshi, R. D., & Verspoor, A. (2013). *Secondary education in Ethiopia: Supporting Growth and Transformation.* Washington DC: World Bank.

Joyce, B., Marcia, W., & Emily, C. (2009). *Models of teaching*. Boston, MA: Pearson/Allyn and Bacon.

Joynes, C., Rossignoli, S., & Fenyiwa, E. (2019). 21st century skills: Evidence of issues in definition, demand and delivery for development contexts. *K4D Helpdesk Report.* Brighton, UK: Institute of Development Studies.

Kapur, R. (2019). Meaning and significance of secondary education. *International Journal of Law, Management and Social Science*, 3(1), 85-95.

Kar, A. (2011). Importance of life skills for the professionals of 21st century. *IUP Journal of Soft Skills,* 5(3), 35-45.

Katchevich, D., Hofstein, A., & Mamlok-Naaman, R. (2013). Argumentation in the chemistry laboratory: Inquiry and confirmatory experiments. *Research in Science Education,* 43(1), 317-345.

Kate, F. (2014). *Competency-based education: History, opportunities, and challenges*. UMUC Center for Innovation in Learning and Student Success (CILSS). https://www.researchgate.net/publication/281444311.

Khalifa, A. (2009). Rethinking the Current Dominant Approach to Business School Strategy. *European Business Review,* 22(6).

Khan, K. H. (2012). Improving teachers' assessment literacy through professional development. *Teaching Education,* 22(3), 255-276.

Kim, J. S. (2005). The effects of a constructivist teaching approach on student academic achievement, self- concept, and learning strategies. *Asia Pacific Education Review,* 6(1), 7-19.

Krippendorf, K. (2004). *Content analysis an introduction to its methodology* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Lauglo, J., Akyeampong, A. K., Mwiria, K., & Weeks, S.G. (2012). *Vocationalized secondary education revisited.* Washington DC: World Bank.

Lauwerier, T. (2015). Relevance and basic education in Africa. *Journal of Educational Research in Africa,* 7, 28-41.

Lederman, N. G., & Lederman, J. S. (2012). Nature of scientific knowledge and scientific inquiry: Building instructional capacity through professional development. In B. Fraser et al. (eds.). Second *International Handbook of Science Education* (pp 335- 359). Springer.

Lewin, K. (2008). *Strategies for Sustainable Financing of Secondary Education in Sub-Saharan Africa*. Washington, DC: World Bank.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research (*4th ed., pp. 97–128). Thousand Oaks, CA: Sage.

Lindeberg, J. (2009). *From inclusive education to inclusive curricula*. UNESCO-IBE.

Lippman, L., Ryberg, R., Carne, R., & Moore, K. (20015). *Workforce connections: key "soft skills" that foster youth workforce success: Toward a consensus across fields.* USAID: Child Trends, Inc.

Lomas, L. (2002). Does the development of mass education necessary mean the end of quality? *Quality in Higher Education,* 8, (1), 71 – 79.

Longhurst, R. (2010). Semi-structured interviews and focus groups. In N. Clifford, S. French, & G. Valentine (Eds.), *Key methods in geography* (2nd ed.) (pp. 103-115). London, EN: SAGE Publications Limited.

Maaza, B. (1966). *A study of modern education in Ethiopia: Its foundation.* Colombia University.

Maclean, R., & Pavlova, M. (2013). Vocationalization of secondary and higher education: pathways to the world of work. *In revisiting global trend in TVET: Reflection on theory and practice (pp. 40-84. Germany: UNESCO-UNEVOC.*

Majid, S., Liming, Z., Tong, S., & Raihana, S. (2012). Importance of Soft Skills for Education and Career Success. *International Journal for Cross-Disciplinary Subjects in Education,* 2(Special 2), 1036–1042.

Marriott, N., & Goyder, H. (2009). *Manual for monitoring and evaluating educational partnerships.* UNESCO: International Institute for Educational Planning.

Marsh, C. J. (2009). *Key concepts of understanding curriculum.* Nw Yourk : Routlledge Taylor and Francis Group.

Mayer, R. E. (2013). Problem solving. In D. Reisberg (Ed.), *The Oxford handbook of cognitive psychology* (pp. 769-778). Oxford University Press.

Maxwell, L (2007). Competency in Child Care Settings: The Role of the Physical Environment. *Environment and Behavior*, 39 (2): 229-245.

McMillan, J. H., & Schumacher, S. (2017). *Research in education: A conceptual introduction*. NewYork: Harper Collins.

McNeil, J. D. (2009). *Contemporary curriculum in thought and action.* New York: JOHN WILEY & SONS, INC.

Meadows, D. H. (2008). *Thinking in systems: A Primer*. White River Junction, VT: Chelsea Green Publishing Company.

Melese, S. (2015). *The contribution of teacher education program curricula for prospective teachers' multicul- tural competence*. PhD Dissertation, AAU, (Unpublished).

Mensah., J., Ameyaw, A., and Dennis, S. (2007). Bridging the gap: Linking school and world of work in Ghana. *Journal of Career and Technical Education*, 23(1), 133-152.

Mereku, K. (2016). *Differentiation of the secondary school curriculum.* https://www.researchgate.net/publication/268032217.

Messay Kebede (2006). *The roots and fallouts of Haile Selassie's Educational Policy. Philosophy faculty publications. Paris: UNESCO.*

Meyer, L., Null, C., Cosentino, C., & Sridharan, S. (2017). *Policies and Programs to Improve*

Secondary Education in Developing Countries: A Review of the Evidence. *Working papare-mathematical Policy Research (pp.1-23).*

MoE (2002). *Education Sector Development Program II*. Addis Ababa: Ministry of Education.

MoE (2005). *Education Sector Development Program –III. 2005/006- 2010/2011. Program Action Plan.* Addis Ababa: Berhanena Selam Printing Enterprise.

MoE (2005). *General Education Quality Improvement Package (GEQIP).* Addis Ababa

MoE (2009). *Curriculum Framework for Ethiopian Education (KG- Grade 12).* St. George printing press.

MoE (2010). *Curriculum Framework for Ethiopian Education (KG – Grade 12).* Federal Democratic Republic of Ethiopia Ministry of Education, Curriculum Development and Implementation Core – Process (CDICP). Policy document.

MoE (2010). *Education Sector Development Programme IV (ESDP IV).* Addis Ababa.

MoE (2015). *Education Sector Development Programme V (ESDP V).* Addis Ababa.

MoE (2021). *Education Sector Development Programme VI (ESDP VI).* Addis Ababa.

Mitchell, B. (2016). Understanding curriculum. *Asian Journal of Humanities and Social Studies*, 4(4), 299-331.

Morgan, D. L. (2007). Paradigms lost and pragmatism regained. *Journal of Mixed Methods Research*, 1(1), 48-76.

Mosha, H. J. (2012). Common core skills for lifelong learning and sustainable development in Africa. *A paper presented at the Triennale on education and training in Africa.* Ouagadougou, Burkina Faso.

Mosweunyane, D. (2013). The African educational evolution: From traditional training to formal education. *Higher Education Studies,* 3(4), 50-59.

Murthy, V. (2016). Issues, problems and possibilities of life skills education for school adolescents. *International Journal of Indian Psychology*. 3(3), 56-76.

Ndala, K. (2006). *Education trends & developments in Sub-Saharan Africa.* https://www.opensocietyfoundations.org.

Ngoni, M., & Oswell, H. C. (2017). Unpacking the relevance/irrelevance problematic of education in Zimbabwe. In Edward Shizha and Ngoni Makuvaza (eds.) *Re-thinking*

Postcolonial Education in Sub-Saharan Africa in the 21st Century (pp. 53-68). Netherlands: Sense Publishers.

Nilsen , T. & Gustafsson, J. (2016). Teacher quality, instructional quality and student outcomes relationships across countries, cohorts and time. *International Association for the Evaluation of Educational Achievement*. Switzerland: Springer.

Nix, R. K., Fraser, B. J., & Ledbetter, C. E. (2005). Evaluating an integrated science learning environment using the constructivist learning environment survey. *Learning Environments Research, 8*(2), 109–133.

Oakleaf, M. (2009). The information literacy instruction assessment cycle: A guide for increasing students learning and improving librarian *instructional skills. The Journal of Documentation, 65(4)*, 539–560.

OECD (2006). *Education at a glance. OECD indicators*. Paris: OECD Publishing.

OECD (2010). *Strong performers and successful reformers in education: Lessons from PISA for the United States*. Paris: OECD Publishing.

OECD (2020). *Eucation policy outlook: Germany.* Paris: OECD Publishing.

Offorma, G. (2010). *Curriculum diversification as a function of social engineering. Retrieved* from: https://www.researchgate.net/publication/280722561.

Okoye, K., & Udoudo, S. (2015). Vocationalisation of secondary education in Nigeria: Issues, challenges and prospects. *Journal of Education and Practice,* 6(30), 71-76.

Olibie., E. I. (2013). Curriculum planning in secondary schools: Principals' practices and challenges in an era of knowledge and learning management. *International Journal of Academic Research in Progressive Education and Development,* 2 (1), 443-453.

Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools,* 13(1), 48-63.

Opertti, R. (2017). Curriculum in the education 2030 agenda: Latin America and the Caribbean. *In-Progress Reflections on Current and Critical Issues in Curriculum, Leaning, and Assessment,* No. 10. Geneva, IBE-UNESCO.

Opertti, R., & Brady, J. (2009). *Moving forward with secondary education reform: Issues, challenges and proposals.* Retrieved from http://www.ibe.unesco.org.

Ornstein A. C., & Hunkins, F. P. (2009). *Curriculum foundations, principles and issues.* (5th ed). Boston: Allyn and Bacon.

Oudeweetering, K., & Voogt, J. (2017). Teachers' conceptualization and enactment of twenty-first century competences: exploring dimensions for new curricula. *Curriculum Journal,* 29(1), 116-133.

Ozerem, A., & Akkoyunlu, B. (2015). Learning environments designed according to learning styles and its effects on mathematics achievement. *Eurasian Journal of Educational Research,* 61(1), 61-68.

Paige, J. (2009). The 21st century skills movement. *Educational Leadership, 9*(67), 1-11.

Pellegrino, J. W., & Hilton, M. L. (Eds.). (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century.* Washington D.C.: The National Academies Press.

Pešikan. A, & Lalović. A. (2017). *Education for life: Key 21 century competencies in curricula in Montenegro*. Podgorica: UNICEF Montenegro.

Peter, O. I., Abiodun, A. P., & Jonathan, O. (2010). Effect of constructivism instructional approach on teaching practical skills to mechanical related trade students in western Nigeria technical colleges. *International NGO Journal,* 5(3), 59-64.

Raija, M., Annica, I., & Susan, O. (2018). Secondary vocational education in Finland. *Workforce Education Forum*, 39(ss.1), 43-51.

Ranaweera, A. M. (2000). *Relevance, balance and integration of the content of general education: Achievements, trends and issues.* Germany: Hamburg, UNISCO.

Ravitz, J., Hixson, N., English, M., & Mergendoller, J. (2012). Using project based learning to teach 21st century skills: Findings from a statewide initiative. *Paper presented at Annual Meetings of the American Educational Research Association.* Vancouver, BC.

Raymond, J. E., Homer, S. E., Smith, R., & Gray, J. E. (2013). Learning through authentic assessment: An evaluation of a new development in the undergraduate midwifery curriculum. *Nurse Education in Practice,* 13(5), 471-476.

Read, M. (2007). Sense of place in child care environments. *Early Childhood Education Journal,* 34(6), 387-392.

Reynolds, R., & Harel, C. (2011). Contrasts in student engagement, meaning-making, dislikes, and challenges in a discovery-based program of game design learning. *Journal of Educational Technology Research and Development*, 59(2), 267–289.

Robles, M. M. (2012). Executive perceptions of top 10 soft skills needed in today's workplace. *Business Communication Quarterly*, 75(4): 453- 465.

Roseman, B. (2018). *From policy to practice: Perceptions of effective teaching in Ethiopia.* Universitetet i Oslo.

Rychen, D. S. (2016). *Education 2030: Key competencies for the future*. Retrieved from: http://www.oecd.org/education.

Saavedra, A. and Opfer, V. (2012). *Teaching and Learning 21st Century Skills: Lessons from the Learning Sciences. A Global Cities Education Network Report*. New York, Asia Society.

Sahlberg, P. (2007). *Secondary education in OCED countries: Common challenges, differing solutions.* Brazil: European Training Foundation.

Sahlberg, P. (2009). *A short history of educational reform in Finland.* http://www.oxydiane.net/IMG/pdf/Finland-Sahlberg.pdf.

Salonen, A., Hartikainen-Ahia, A., Jonathan, H., Scheersoi, A., & Keinonen, A. (2017). Secondary school students' perceptions of working life skills in science-related careers, *International Journal of Science Education*, 39(10), 1339-1352.

Samad, A. S., & Thiyagarajan, R. (2015). Total quality management in higher Education: *A conceptual model to achieve excellence in eanagement Education*. 6(1), 618-629.

Saunders, M., Lewis, P. & Thornhill, A. (2012). *Research Methods for Business Students.* Harlow: Pearson Education Ltd.

Schleicher, A. (2011). *Building a high-quality teaching profession: Lessons from around the World*. OECD Publishing.

Scott, L. S. (2015). *The futures of learning: What kind of learning for the 21st century?*(ERF Working Paper No. 14). Paris: UNESCO Education Research and Foresight.

Seetha, N. (2014). Are Soft skills Important in the Workplace?: A Preliminary Investigation in Malaysia. International Journal of Academic Research in Business and Social Sciences, 4(4), 44-56.

Senge, P., et al. (2012). *Schools that learn.* New York: Crown Business.

Serris, R., & Miller, E. (2011). How design of physical environment impacts early learning: Educators and parents perspectives. *Australasian Journal of Early Childhood,* 36(4).

Seyyedrezaie, S. H., & Barani, G. (2017). Constructivism and curriculum development. *Journal of Humanity and Instruction*, 1(3), 119-124.

Shah, R. K. (2019). Effective constructivist teaching learning in the classroom. *Shanlax International Journal of Education*, 7(4), 1–13.

Shan, Y. (2021). Philosophical foundations of mixed methods research. *Philosophy Compass*, 17 (1), 1-21.

Sharma, B., Prajapati, R., and Sharma, D. (2017). Significance of life skills education. *Contemporary Issues in Education Research,* 10(1), 1- 6.

Silva, E. (2008). *Measuring skills for the 21st century*. Washington, DC: Education Sector.

Silva, E. (2009). Measuring skills for 21st-century learning. *Phi Delta Kappan*, 90 (9), 630-634.

Sisay Awgichew. (2016).The Historic Move, Contemporary Challenges and Opportunities in Ethiopian Education. *International Journal of African and Asian Studies,* 26(1), 56-66.

Solomon Areaya. (2008). *Policy formulation curriculum development and implementation in Ethiopia.* Addis Ababa: The Book Center Addis Ababa University.

Solomon Melese. (2019). Trends of educational policy formulation and implementation in Ethiopia: A historical analysis. *International Journal of Education & Management Studies,* 9(4), 264-272.

Solomon, M., & Aschale, T. (2019). The Ethiopian curriculum development and implementation vis-à-vis Schwab's signs of crisis in the field of curriculum. *Cogent Education*, 6(1), 1-16.

Solomon Mengistie (2020). Historical Upheavals of the Educational Policy Formulation and Implementation in Ethiopia. *In* K. S. Adeyemo (ed.), *The Education Systems of Africa, Global Education Systems* (pp 1 -23). Switzerland : Springer Nature.

Stenhouse, L. (2012). A process model of curriculum. In Y. Reed, J. Gultig & M. Adendorff (eds). *Curriculum: organizing knowledge for the classroom* (3rd ed). Cape Town: Oxford University Press.

Stramkale, L. (2018). Student's communication activity in small group learning. In V. Dislere (Ed.), The proceedings of the international scientific conference. *Rural Environment.*

*Education. Personality, (pp.*25-32). Jelgava: Latvia University of Life Sciences and Technologies.

Suarta, M., Pranadi, F., Suwintana, K., & Hariyanti, K. (2017). Employability skills required by the 21st-century workplace: A literature review of labour market demand. *Advances in Social Science, Education and Humanities Research*, 102(1), 337-342.

Sullivan, N., & Burce, A. (2014). Teaching and learning in competency-based education. *The Fifth International Conference on e-Learning.* Serbia: Belgrade.

Susan, D., & East, J. (2017). Soft Skills Needed for the 21st Century Workforce. *International Journal of Applied Management and Technology*, 18(1), 17-32.

Tan, C., Koh, K., & Choy, W. (2016). *The Education System in Singapore.* Torun: Adam Marszalek Publishing House.

Tanner, D., & Tanner, L. (2007). *Curriculum development: Theory into practice* (4th ed.). Upper Saddle River, New Jersey Columbus, Ohio: Pearson Merrill Prentice Hall.

Tedesco, J. C., Opertti, R., & Amadio, M. (2013). The curriculum debate: why it is important today. *IBE Working Papers on Curriculum, Issues No. 10.* Switzerland: UNISCO.

Tekeste Negash (1990).*The crisis of Ethiopia education: Some implications for nation building.* Sweden: Uppsalo University.

Tekeste Negash (2006). *Education in Ethiopia: From crisis to the brink of collapse*. Stockholm: Elanders Gotab AB.

Tekeste Negash (2019). Education and nation building in Ethiopia: Past and present developments. *Journal of Educational and Behavioral Sciences, 6*2(1), 175-177.

Terzieva, L., Luppi, E., & Traina, I. (2015). Teaching and assessing transferable/transversal competencies. *Science and Research. 8(1), 25-56.*

Teshome, G. (1979). *Education in Ethiopia: Prospect and retrospect.* University of Michigan Press.

Tewabe, Y. (2018). *Public Employment Services Provision and Labour Market Information Collectiona nd Utilization Ethiopia.* International Labour Organization.

Tharenou, P., Donohue, R., & Cooper, B. (2007). *Management research methods.* Cambridge University Press.

Tirussew, T., Amare, A., Jeilu, O., Tassew, W., Aklilu, D., & Berhannu, A. (2017*). Ethiopian Education Development Roadmap (2017-30)*. MoE: Education Strategy Center (ESC).

Tong, L. F., & Han, Y.B. (2003). *Applying total quality management philosophy to the teaching and learning process, in learning for an unknown future*. New Zealand.

TGE (1994). *Education and Training Policy. St. George Printing Press.* Addis Ababa

Trilling, B., & Fadel, C. (2009). *21st century skills*. San Francisco: Jossey-Bass.

Tyler, R. (2013). Basic principles of curriculum and instruction. In D. J. Flinders & S. J. Thornton (eds). *The curriculum studies reader* (4th ed). London: Routledge.

Taylor, N., & Robinson, N. (2019). *Secondary Education in Sub-Saharan Africa Teacher Preparation and Support: Literature review.* JET Education Service.

UNESCO (2007). *Secondary education regional information base: country profile - Viet Nam*. Bangkok: UNESCO Bangkok.

UNESCO (2007). *Secondary education regional information base: country profile-Vietnam*. Bangkok: UNESCO.

UNESCO (2013). *UNESCO handbook on education policy analysis and programming. (*Vol. 1). Bangkok: UNESCO.

UNESCO (2015). *Rethinking education: Towards a global common good?* Paris: UNECCO.

UNESCO (2016). *School and teaching practices for twenty-first century challenges: Lessons from the Asia-Pacific region (Phase II).* Regional synthesis report. UNESCO.

Ustun, U., & Eryilmaz, A. (2018). Analysis of Finnish education system to question the reasons behind Finnish success in PISA. *Studies in Educational Research and Development,* 2(2), 93-114.

Van Gennip, N., Segers, M., & Tillema, H. (2010). Peer assessment as a collaborative learning activity: the role of interpersonal variables and conceptions. *Learning and Instruction,* 20(4), 280-290.

Vasanthakumari, S. (2019). Soft skills and its application in work place. *World Journal of Advanced Research and Reviews*, 3(2), 66-72.

Verspoor, A. (2008). *At the crossroads: Choices for secondary education in Sub-Saharan Africa.* The World Bank: Washington DC.

Verspoor, A., & Bregman, J. (2008). *At the crossroads: Challenges for secondary education in Africa.* ADEA: International Institute for Educational Planning.

Villarroel, V., Boud, D., Bloxham, S., Bruna, D., & Bruna, C. (2019). Using principles of authentic assessment to redesign written examinations and tests. *Innovations in Education and Teaching International*, 1-12.

Vinales, J. J. (2015). The learning environment and learning styles: A guide for mentors. *British Journal of Nursing*, 24(8), 454-457.

Voogt, J., & Roblin, P. (2010). *21st century skills: Discussion paper*. Netherlands: Tech. Enschede.

Voogt, J., & Roblin, N. P. (2012). A Comparative analysis of international frameworks for 21st -century competences: Implications for national curriculum policies. *Journal of Curriculum Studies,* 44(3), 299-321.

Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need and what we can do about it?*: New York: Basic Books publisher.

Walker, M., (2010). A human development and capabilities 'prospective analysis' of global higher education policy. J. Educ. Policy, 25(4), 485-501.

Webb, N. L. (2007). Issues related to judging the alignment of curriculum standards and assessments. *Applied Measurement in Education*, 20(1), 7-25.

Westbrook, J., Durrani, N., Brown, R., & Pryor, J. (2013). *Pedagogy, curriculum, teaching practices and teacher education in developing countries.* University of Sussex. http://r4d.dfid.gov.uk.

Wiersma, W., & Jurs, S. G. (2005). *Research methods in education. An introduction.* Boston: Pearson Education, Inc.

Williamson, G. (2013).*The future of the curriculum: School knowledge in the digital age*. https://doi.org/10.7551/mitpress/9457.003.0011.

Williams, A. M. (2015). *Soft skills perceived by students and employers as relevant employability skills. Walden Dissertations and Doctoral Studies.* https://scholarworks.waldenu.edu/dissertations/1427.

Williams, E., Persaud, G., & Tunner, T. (2008). What makes schooling effective? A Synthesis and Critique. *Journal of International Society for Educational Planning*, 1 (1), 22-24.

Winarso, W. (2018). Authentic assessment for academic performance: Study on the attitudes, skills, and knowledge of grade 8 mathematics students. *Malikussaleh Journal of Mathematics Learning*, 1(1), 1–8.

Winterton, J., Deist, F., & Stringfellow, A. (2006). *Typology of knowledge, skills and competences: clarification of the concept and prototype.* Luxembourg: Office for Official Publications of the European Communities.

Wiseman, A. W., Alromi, N. H., & Alshumrani, S. (Eds.). (2014). *Education for a knowledge society in Arabian Gulf countries: International perspectives on education and society series.* Bingley, United Kingdom.

Woo, Y., & Reeves, T. C. (2007). Meaningful interaction in web-based learning: A social constructivist interpretation. The *Internet and Higher Education,* 10(1), 15-25.

Wood, J. (2012). *Global life skills education evaluation: Draft final report.* London:UNICEF

Wuhibegezer, F., & Gezae, H. (2015). Re-Africanizing the educational system of Ethiopia. *African Journal of History and Culture*, 7(2), 38-43.

Yilmaz, K (2009). A vision of history teaching and learning: Thoughts on history education in secondary schools. *The High School Journal*, 92(2), 37-46.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Yin, R. K. (2018). *Case study research and applications: Design and methods (6th Ed.).* Sage

Zewdie, M. (2000). *A study guide for curriculum implementation and evaluation.* Unpublished Teaching Materials: Addis Ababa University.

Appendix A

Addis Ababa University

College of Education and Behavioral Sciences

Department of Curriculum and Instruction

Questionnaire to be filled by Secondary School Teachers

This questionnaire is mainly designed to gather data on the role of secondary school curriculum and pedagogical practices of the schools. Your genuine response to each item counts much to the worth of the study and helps the researcher to be confident on the collected data. The information is purely for academic research purpose and will be kept confidential. Hence, you are kindly requested to respond to each item considering the provided directions.

Thank you in advance for your cooperation!

General Direction

- ✓ **Circle** the letter or number that best represents your response (for close ended questions).
- ✓ Write your response on the space provided (for open ended questions)

Key: The **skills** the world of work (employers) require from workforce **or** the **skills** students required to acquire for work are ***critical thinking, problem solving, decision making, creative thinking skills, communication, teamwork, independent work, self disciple & ability to learn.***

I. Background Information

1. Gender: **A**. Female **B.** Male

2. Level of education **A**. Diploma **B.** BA / BSC **C**. BED
D. BA + PGDT or BSC + PGDT **E**.MA / MSC **F.** MA / MSC + PGDT

3. Specialization area: **A.** Chemistry **B.** Biology **C.** History **D.** Geography
E. Language **F.** Mathematics **G.** Physics **H.** Civics **I.** Physical education **J.** IT

4. Years of teaching experience **A.** 1-5 **B**. 6-10 **C**.11-15 **D.** Above 15

II. The Role and Relevance of Secondary Education

1. How do you explain the role of secondary education? /Write the major purpose of secondaryeducation/ _____
_____
_____

Read the following statements and **circle the number** that best represents the level of your agreement or disagreement with each using the scale provided.

1= Strongly disagree 2= Disagree 3= Undecided 4= Agree 5= Strongly agree

i	**The role and relevance of secondary education**	**Scale**				
1	Secondary education prepares students for higher education	1	2	3	4	5
2	Secondary education prepares students for work (world of work)	1	2	3	4	5
3	Secondary education considers the needs and problems of the country / society	1	2	3	4	5
4	Secondary education considers the diverse interest of students	1	2	3	4	5
5	Secondary education promotes holistic development of students	1	2	3	4	5
6	Secondary education serve students who have planned to go to higher education institutions and world of work equally.	1	2	3	4	5
ii	**Relevance of secondary school curriculum (Hint: textbooks = your subject: Chemistry, Geography, Biology…)**					
1	Secondary school curriculum encourage students to develop cognitive skills (eg: critical thinking, problem solving, decision making, creative thinking skills)	1	2	3	4	5
2	Secondary school curriculum provides students with interpersonal skills / skills that are essential to effectively communicate and interact with other people/ (eg: communication, teamwork, collaboration)	1	2	3	4	5
3	Secondary school curriculum enables students develop intrapersonal skills / skills that are essential to manage one' behavior and emotions/ (eg: self control, self discipline, work ethics, ability to learn independently)	1	2	3	4	5
4	Both theoretical knowledge and practical skills are equally emphasized in secondary school curriculum	1	2	3	4	5
5	Activities in the curriculum (textbook) promote the development of the skills that are essential in the world of work	1	2	3	4	5
6	Review exercises & end of unit questions in the curriculum (textbook) encourage students to acquire the skills prepare them for work	1	2	3	4	5
7	Objectives (unit and sub-topics objectives) included in the curriculum (textbook) reflect the skills employers require from workforce	1	2	3	4	5
8	Secondary school curriculum encourages students to develop work habits and attitudes that are essential to be effective in the workplace	1	2	3	4	5
9	Objectives (units and sub-topics objectives) listed in the textbook of your subject promote the development of higher order thinking skills (analysis, synthesis & evaluation)	1	2	3	4	5

III. The following are some of the pedagogical practices secondary school teacher could demonstrate in the process of instruction to help students learn the basic work skills. Using the scale provided **Circle** the **number** that best represent how often teachers/you demonstrate the instructional activities next to each statement.

1= Never 2= Rarely 3=Sometimes 4= Often 5= Always

i.	**How often teachers perform the following activities. Teachers:**	**Scale**				
1	employ the different interactive (student centered) instructional strategies in teaching the lessons (topics)	1	2	3	4	5
2	teach practical skills to the level expected from his/her subject	1	2	3	4	5
3	ask students to do learning activities that demand them to analyze, synthesize and evaluate information/data	1	2	3	4	5
4	give students activities to be completed individually (independent work/learning)	1	2	3	4	5
5	provide activities that demand students to generate ideas, test out ideas & invent a solution to open-ended question or problem	1	2	3	4	5
6	arrange students for small group discussion (work) during instruction	1	2	3	4	5
7	assign students to different responsibilities (leader, time keeper, moderator, presenter) during small group discussion	1	2	3	4	5
8	give students chance to supervise & provide feedback to other students' work and encourage them to use the feedback to revise their work	1	2	3	4	5
9	invite students to do project work or conduct laboratory experiment when needed (Hint: based on the nature of your subject)	1	2	3	4	5
10	request students to prepare & submit project work or laboratory report	1	2	3	4	5
11	encourage students to prepare and deliver oral presentation/reflection in the classroom	1	2	3	4	5
12	encourage students to identify and solve problems independently	1	2	3	4	5
13	ask students to make decisions and explain the rationale behind their judgment (eg: the what and how of learning)	1	2	3	4	5
14	arrange debate at school or classroom level	1	2	3	4	5
15	provide activities that require students to demonstrate using different tools & apply a range of strategies/techniques	1	2	3	4	5
16	use majority of the instructional time to lecture the lesson	1	2	3	4	5
17	encourage students to draw their own conclusions based on analysis and interpretation of relevant facts	1	2	3	4	5
18	give students tasks to be completed within the given time using the					

	prescribed criteria & procedure, and give them feedback	1	2	3	4	5
19	arrange educational tour / field trip to help students visit different industries or historical areas and reflect their observations	1	2	3	4	5
20	encourage students to prepare and use classroom rules & norms	1	2	3	4	5
ii	**Assessment Techniques: How often teachers:**					
1	invite students to assess other students' work & give feedback to peers	1	2	3	4	5
2	use assessment tools & items that invite students to compare, analyze & summarize information, draw their own conclusions, and solve problems	1	2	3	4	5
3	use oral presentation as an assessment tool	1	2	3	4	5
4	assess practical skills as frequent as that of paper and pencil exam	1	2	3	4	5

IV. The following statements reflect the conditions that are required to prepare students for work. Using the scale provided **Circle** the **number** that best represent the level of your agreement or disagreement next to each statement regarding the status of your school.

1= strongly disagree 2= Disagree 3= Undecided 4= Agree 5= Strongly agree

No	**School conditions**	**Scale**				
1	Knowledgeable & skilled teachers are adequately available	1	2	3	4	5
2	School principals facilitate students maximum learning	1	2	3	4	5
3	School environment is conducive for students learning	1	2	3	4	5
4	Instructional materials are adequately available in the school	1	2	3	4	5

V. In this section, you are asked to show the extent to which learning objectives, activities and end of unit exercises in the textbook of your subject (Biology, Chemistry, History, Geography, Language, **…..**) encourage students to develop the skills listed in the table below.

Using the **scale** provided **Circle** the **number** that best represent your view next to each skill

1= Very low **2= Low** **3= Medium** **4= High** **5= Very high**

	Work skills	**Scale**				
1	Communication skills	1	2	3	4	5
2	Teamwork & collaboration skills	1	2	3	4	5
3	Problem solving skills	1	2	3	4	5
4	Decision making skills	1	2	3	4	5
5	Independent work	1	2	3	4	5
6	Leadership skills	1	2	3	4	5
7	Critical thinking skills	1	2	3	4	5
8	Creative thinking skills	1	2	3	4	5
9	Self management skill (work ethics, self discipline, time usage)	1	2	3	4	5
10	Positive attitudes & work habits	1	2	3	4	5
11	Ability to use technology	1	2	3	4	5
12	Practical skills	1	2	3	4	5

Appendix A'

Yunvarsiitii Finfinnee

Kolleejjii Barnootaa fi Saayinsii Yaad-qalbii

Muummee Sirna Barnootaa fi Barsiisuu

Bargaaffii Barattootaan Guutamu

Kaayyoon bargaaffii kanaa kaayyoo sirna barnoota sadarkaa 2^{ffaa} fi ga'ee manni barumsaa sadarkaa 2^{ffaa} baarattoota qopheessuu irratti qabu ilaalchisee hubannoo jiru beekuu dha. Dhugummaan deebii ykn yaada isin keennitanii argannoo qorannichaaf gumaacha guddaa qaba. Yaadni isin kennitan qorannoo barnootaa (academic research) qofaaf kan oolu dha.

Gumaacha keessaniif baayee galatoomaa!

Qajeelfama Waliigalaa (general direction)

- ✓ Gaaffilee filannoo qabaniif qubee deebii (yaada) kee bakka bu'u qabatetti mari.
- ✓ Gaaffilee banaa ta'aniif (ibsa barbaadaniif) yaadakee bakka kenname irratti barreessi

Furtuu: Dandeettiwwan hojii kan jedhaman *dandeettii* ***rakkoo furuu, yaada ofii ibsuu (bareeffamaa fi afaniin), murtoo kennuu, of to'achuu, yeroo kabajuu, gareen hojjechuu fi walgargaaruu, xiinxaluu fi yadaa haaraa burqisiisuu*** dha.

I. Odeeffannoo dhuunfaa (Background Information)

1. Saala: **A**. Dhalaa **B.** Dhiira
2. Sadarkaa barnootaa (grade level): **A.** Kutaa 9 **B.** Kutaa 10 **C.** Kutaa 11 **D.** Kutaa 12
3. Damee barnootaa (Barattoota kutaa 11 fi 12 qofaaf; kutaa 9 fi 10 hin ilallatu)

A. Saayinsii umamaa (Natural science) **B.** Saayinsii hawaasaa (Social science)

II. Hubannoo kaayyooo fi ga'umsa barnoota sadarkaa 2^{ffaa} irratti jiru

1. Kaayyoon barnoota sadarkaa 2^{ffaa} maal? (Major purpose of secondary education)

_____

_____

2. Barnoota sadarkaa 2^{ffaa} (kutaa 12^{ffaa}) yoo xumurte maal ta'uu feeta?

A. Barataa/ttuu yunversiitii **B.** Barataa/ttuu kolleejjii ogummaa (barsiisumma, fayyaa, fi kkf)

C. Barataa/ttuu leenjii tekinikaa fi ogummaa **D.** Hojii dhuunfaakee hojjechuu/banachuu

E. Dhaabbilee mootummaa ykn dhuunfaa keessatti qacaramanii hojjetaa ta'uu

Himoota **gabatee** armaan gadii keessatti tarreeffaman erga hubatteen booda sadarkaa deggersaa yaadota dhiyaatan irratti qabdu gulantaa (scale) kennaman keessaa filachuun lakkoofsa yaadakee bakka bu'utti mari.

1 = Baayyee gadaanaa (very low) **2 =** Gadaanaa (low) **3 = Giddu** galessa (medium)

4 = olaanaa (high) **5= Baayyee** olaanaa (very high)

i	**Qabxiilee Kaayyoo fi ga'umsa barnoota sadarkaa 2^{ffaa} ilaallatan**	**Gulantaa (scale)**				
1	Barnootni sadarkaa 2^{ffaa} yunversiitiif barattoota qopheessa	1	2	3	4	5
2	Barnootni sadarkaa 2^{ffaa} hojiif (kan dhuunfaa ykn mootummaa ykn miti otummaaf) barattoota qopheessa	1	2	3	4	5
3	Barnootni sadarkaa 2^{ffaa} fedhii fi rakkoo hawaasa biyyattii ilaalcha keessa kan galche dha	1	2	3	4	5
4	Barnootni sadarkaa 2^{ffaa} fedhii fi hawwii barattoota hundaa dhugoomsuu giddu galeessa kan godhate dha.	1	2	3	4	5
5	Barnootni sadarkaa 2^{ffaa} dagaagina (dandeettiiwwan) hunda galeessa barattootni akka gonfatan kan gargaaru dha	1	2	3	4	5
6	Barnootni sadarkaa 2^{ffaa} barattoota fedhii yunversiitii galuu qabanii fi hojjetaa (dhuunfaa, mootummaa) ta'uu barbaadan walqixa tajaajila.	1	2	3	4	5
ii	**Qabxiilee sirna barnootaa irratti xiyyeeffatan**					
1	Qabiyyeewwan barnoota sadarkaa 2^{ffaa} barattootni **dandeettiwwan yaaduu olaanna** (xiinxaluu, rakkoo furuu, yaada haraa burqisiisuu fi murtoo kennuu) akka gonfatan ni taasisu.	1	2	3	4	5
2	Qabiyyeewwan barnoota sadarkaa 2^{ffaa} barattootni **dandeettiiwwan namoota biro waliin hojjechuu** (Fkn: yaada waliif hiruu, gareen hojjechuu, nama gargaaruu) akka gonfatan ni taasisu.	1	2	3	4	5
3	Qabiyyeewwan barnoota sadarkaa 2^{ffaa} barattootni **dandeettiiwwan of-gaggeessu ykn of-to'achuu** (Fkn: yeroo kabajuu, dhuunfaan hojjechuu, namuusa hojii kabajuu) akka horatan ni taasisu.	1	2	3	4	5
4	Barnootni sadarkaa 2^{ffaa} barattootni beekumsa yaad-hiddamaa (theory) fi dandeettiwwan gochaa qabatamaa (practical skills) walqixa akka gonfatan ni taasisu.	1	2	3	4	5
5	Shaakalootni (activities) kitaabilee barataa keessa jiran dandeettiwwan hojii tarreeffaman barattooni akka gonfatan ni gargaaru.	1	2	3	4	5
6	Gaaffileen dhuma qabiyyeewwanii fi dhuma boqonnaa (exercises and end of unit questions) kitaabilee barataa keessa jiran dandeettiwwan hojii tarreeffaman barattooni akka gonfatan kan gargaarani dha.	1	2	3	4	5

7	Qabiyyeen barnootaa amaloota fedhii hojii gabbisanii fi ilaalchota hojii fiixaan baasuuf gargaaraniif xiyyeeffannoo ni kenna.	1	2	3	4	5
iii	**Qabbiilee adeemsa baruu-barsiisuu irratti xiyyeeffatan**					
1	Barsiisonni mata duree (qabiyyee) adda addaa maloota barattoota hirmaachisan garaa garaa fayyadamuun barsiisu.	1	2	3	4	5
2	Adeemsa baruu-barsiisuu keessatti shaakalli qabatamaa (practical skills) xiyyeeffannoo guddaa argateera	1	2	3	4	5
3	Barattooni gochaawwan (activities) odeeffannoo guuruu, , xiinxaluu, hiika itti kennuu fi madaaluu barbaadan akka hojjetan ni godhu.	1	2	3	4	5
4	Barsiisonni barattooni gochaalee (shaakaloota) adda addaa dhuunfaan hojjechuun dandeettii ofiin barachuu akka horatan taasisaa jiru.	1	2	3	4	5
5	Barattootni yaada haaraa akka burqisiisan, yaadota adda addaa akkka madaalan fi yaada furmaataa akka burqisiisan ni jajjabeeffamu	1	2	3	4	5
6	Barattootni daree keessatti gareen akka hojjetan taasisfama jira	1	2	3	4	5
7	Yeroo hojii garee barattootni ga'ee adda adda (qindeessaa, kan ibsuu, yadannoo kan qabu, to'ataa yeroo fi kkf) akka ba'an taasisfamaa jira.	1	2	3	4	5
8	Barattootni hojii (deebii) walii isaanii akka madaalanii fi duub-deebii akka waliif kennan ni taasifama.	1	2	3	4	5
9	Barsiisonni barattootni pirojeektota ykn yaaliiwwan laaboraatoorii dhuunfaa fi gareen akka hojjetan tasifamaa jira.	1	2	3	4	5
10	Barattootni gabaasa bu'aa fi argannoo pirojektootaa ykn yaaliiwwan laaboraatoorii bareeffamaan akka dhiyeessan taasifamaa jira.	1	2	3	4	5
11	Barattootni daree keessatti mata duree ykn gaaffilee kennaman irratti ibsa afaaniin ballaa (oral presentation) akka kennan ni taasifama	1	2	3	4	5
12	Barsiisonni barattootni dhuunfaa isaaniin gochaawwan rakkoo furuu adda addaa akka hojjetan(raawwatan) ni taasisu	1	2	3	4	5
13	Barattootaaf yaadota murtoo gaafatan dhiyeessuun yaada murtoo akka dhiyeessaniif ni jajjabeeffamu	1	2	3	4	5
14	Sadarkaa mana barumsaa fi dareetti falmii (debate) qopheessuun barattootni qooda keessatti akka fudhatan tasifamaa jira	1	2	3	4	5
15	Gochaawwan meeshaalee fi toftaalee garaa garaa fayyadamuu barbaadan hojjechuun akka baratan ni taasifama	1	2	3	4	5
16	Barsiisonni yeroo wayitii tokkoof ramadame keessaa yeroo dheeraa fudhachuun (fayyadamuun) qabiyyee barnootaa ibsu	1	2	3	4	5
17	Barattootni odeeffannoo adda addaa qaaccessuun yaada gudunfaa akka dhiyeessan ni taasifama	1	2	3	4	5
18	Barsiisonni barattootni isaanii hojii (shaakala) yeroo kenname keessatti akka xumuran gochuun duub-deebii ni kennu	1	2	3	4	5

19	Barattootni daawwannaa (warshaalee, hambaawwan seenaa fi kkf) taasisuun hubannoo isaanii akka gabbifatan taasifamaa jira	1	2	3	4	5
20	Barattootni itiin bulmaata daree akka qopheessanii fi raawwatan taasisfamaa jira.	1	2	3	4	5
iii	**Qabxiilee iyyaafannoo (qormaata) irratti xiyyeeffatan**					
1	Barattootni hojii barataa biraa madaaluun duub deebii (yaada) akka waliif kennan taasifamaa jira	1	2	3	4	5
2	Barsiisonni gaaffilee dandeettii yaaduu sadarkaa olaanaa (xiixaluu, madaaluu fi yaada haaraa burqisiisuu) gaafatan qopheessuun ga'umsa barattootaa madaalaa (qoraa) jiru.	1	2	3	4	5
3	Barsiisotni barattootni ibsa afaanii (oral presentation) akka dhiyeessan (raawwatan) gochuun ga'umsa isaanii qoraa (madaala)a jiru	1	2	3	4	5
4	Barssisonni qormaata barreeffamaa fi qormaata gochaa qabatamaaf (practical skills) xiyyeeffanno walqixa kennu	1	2	3	4	5
iv	**Qabxiilee Haala mana barumsaa irratti xiyyeeffatan**					
1	Manni barumsaa barsiisota beekumsa qabiyyee barnootaa fi dandeettii barsiisuu irratti ga'umsa olaanaa qaban ga'aa qaba.	1	2	3	4	5
2	Hoggantootni (daarikteeronni) mana barumsaa barachuu barattootaaf xiyyeeffannoo guddaa kennu	1	2	3	4	5
3	Haalli mana barumsaa (school environment) barachuu barattootaaf mijataadha.	1	2	3	4	5
4	Meeshaalee barnootaa ga'aan jira	1	2	3	4	5

IV. Qabiyeewwan barnootaa, shaakalootni fi gaaffileen dhuma boqonnaa kitaabilee barataa gosa barnoota addaa addaa (Chemistry, History, & etc) keessatti argaman dandeettiwwan gabatee armaan gadii keessatti tarreeffaman barattootni akka gonfataniif xiyyeeffannoon kenname hangam akka ta'e madaaluun deebii keessan gulataalee (scale) tarreeffaman keessaa filachuun lakoofsa yaadakee bakka bu'utti mari.

Gulantaa (scale): **1=** Baayyee gadaanaa (very low) **2=** Gadaanaa (low)
3= Giddu galeessa (medium) **4=** Olaanaa (high) **5=** Baayyee olaanaa (very high)

TL	Dandeettiwwan (skills)	Scale				
1	Dandeettii yaada waliif hiruu fi yaada ofii ibsachuu (communication skills)	1	2	3	4	5
2	Dandeettii gareen (waliin) hojjechuu (teamwork & collaboration)	1	2	3	4	5
3	Danddeettii rakkoo furuu (problem solving skills)	1	2	3	4	5
4	Dandeettii murtoo kennuu (decision making skills)	1	2	3	4	5
5	Dandeettii ofiin (dhuunfaan) hojjechuu (work independently)	1	2	3	4	5
6	Dandeettii hoggansaa (Leadership skills)	1	2	3	4	5
7	Dandeettii xiinxaluu (yaaduu) (critical thinking skills)	1	2	3	4	5
8	Dadeettii yaada haaraa burqisiisuu (creative thinking skills)	1	2	3	4	5
9	Dandeetti of-gaggeessuu (self management)	1	2	3	4	5
10	Dandeettii yerootti fayyadamuu	1	2	3	4	5
11	Dandeettii barachuu (ability to learn)	1	2	3	4	5
12	Dandeettii gochaa qabatamaa dalaguu (technical/practical skills)	1	2	3	4	5

Appendix B

Classroom Observation Checklist

The following items are to understand the extent to which the following instructional methods, techniques and activities are employed in classrooms during instruction.

No	Instructional activities	High	Medium	low
1	Active learning instructional strategies/activities are employed			
2	Students are asked to do different learning tasks independently			
3	Students are encouraged to create their own interpretation & conclusion			
4	Students are given chance to supervise, evaluate & give feedback to other students' work (peer evaluation)			
5	Students are given opportunity to work together in small groups			
6	Students are asked to solve problems independently			
7	The teacher provided activities that help students to use & develop higher order thinking skills			
8	Students are provided with instructional activities that demand them to use tools and materials (eg: teaching aids) during demonstration			
9	The teacher provided activities that demand students to generate ideas, test out ideas & invent a solution to a problem			
10	Students are encouraged to present their work or reflect their ideas to the class or teacher			
11	The teacher gave students feedback and asked them to use the feedback to revise their work			
12	The teacher assigned students to demonstrate different responsibilities (leader, time keeper, presenter…) during group work			
13	The teacher used real examples to connect the lesson to the world of work			
14	The teacher spent majority of instructional time to lecture the lesson			
15	The teacher allowed students to do project work or conducted experiment using laboratory equipments & chemicals (when needed)			
16	The teacher requested and supported students to finish a given activity within the given time			
17	Students are encouraged to prepare and submit written reports			
18	Teacher- student and student-student interaction is evident			
19	The teacher asked open-ended questions that have no single correct answer			
20	There is classroom or instructional rule and regulation			
22	Students concentration to the learning tasks			
22	Students participation during instruction			

Observation Checklist to Assess Availability of Instructional Materials and School Facilities

NO	Materials	Adequate available	inadequate available	Not available at all
1	Laboratory room			
2	Laboratory chemicals			
3	Laboratory equipments			
4	Laboratory technicians			
5	Water			
6	Electricity			
7	Toilet (separate for male and female)			
8	Pedagogical center			
9	Instructional materials/teaching aids in pedagogical centers			
10	Library			
11	Reference books			
12	ICT lab rooms			
13	Computers in the lab rooms			
14	Internet serves			
15	Play ground			

Appendix C

Interview Guide for Subject Curriculum Experts

Personal background A. Level of education: _____

B. Specialization (subject): _____ C. Year of experience (as curriculum expert): _____

1. How do you explain the role (goal) of secondary education in Ethiopia?
2. How do you see relevance of secondary education to the world of work (labour market) (governmental employment and non-governmental employment)?
3. What are the documents (guidelines & references) and criteria you used to select secondary school curriculum experiences? Do you think that the prescribed documents and criteria are relevant?
4. How do you evaluate preparation of secondary school curriculum? Do you think that Ethiopian Education Policy is relevant to the context of the world of work and translated to curriculum framework? How about the curriculum framework, was it well translated to secondary school curriculum (chemistry, Biology……)? How?
5. What educational philosophy, curriculum approach and learning theories are prescribed to develop secondary school curriculum? How do you see the practical implementation?
6. How do you evaluate relevance of the learning areas and subjects identified to be learned at secondary school level? Do you think that they are relevant to prepare students for the work and satisfy the diversified future plan and needs of students?
7. Do you think that the key competencies identified to be learned at high school level are relevant to equip students with the skills and knowledge required in the world of work? How?
8. Do you think that secondary education curriculum contents prepare students for different career options; some for university entrance, some for post secondary non university vocational education and training programs, and others for the world of work? Justify
9. How do you evaluate relevance of secondary education curriculum contents to equip students with the competencies and skills that are essential in the world of work? What are the major non technical skills you intended to include in the curriculum? Do you think that they are actually incorporated in the curriculum? Justify with evidence

10. What is/are teaching method/s and assessment technique/s prescribed to guide preparation of secondary school curriculum? Do you think that they are relevant to prepare students for work and actually used in preparation of the curriculum?
11. How do you evaluate curriculum development process? Did you think that needs assessment was conducted? Do you think that it was participatory (all stakeholders are involved)? Who were the participants? How do you see participation of the employers?

Appendix D

Interview Guide for Employers (Governmental & Non-governmental Organizations)

Personal background: A. Level of education: _____

B. Position: _____ C. Year of experience (in the organization): _____

1. How do you explain the role and contribution of secondary education in your organization? How do you evaluate the link between your organization and secondary education and school?
2. How do you see relevance of secondary education to prepare students for work (governmental employment and non-governmental employment)?
3. What are the responsibilities of the employees graduated from secondary schools?
   How do you evaluate the performance of the employees in terms of their responsibilities?
4. What areas of knowledge, skills and attitude your organization expects from employees?
   Do you think that the employees are equipped with the knowledge, skills and attitudes your organization expected from them?
   What are the major achievements and challenges of the employees? Explain what they have and lack.
5. Which of the skills would you say are the most critical skills in your organization that you need employees to possess?
   Checklist to assess the extent to which the following work skills are required in the organizations/ Industry

Work Skills	**Scale**					
	VH	**H**	**M**	**L**	**VL**	**Not at all**
Communication skills						
Cooperation and team work						
Problem solving skills						
Creativity						
Work ethics						
Critical thinking skills						
Manage oneself at work						
Readiness to learn and adapt to environment						
Time management skills						

Independent work						
Leadership skills						
Decision making skills						
Ability to use technology						
Technical skills						

6. How do you evaluate the performance of the employees in terms of the key work skills

Work Skills	**Scale**					
	VH	**H**	**M**	**L**	**VL**	**Not at all**
Listen and communicate effectively						
Readiness to learn and adapt to environment						
Critical thinking skills						
Creative thinking skills						
Solve problems independently						
Manage oneself at work						
work ethics						
Work in teams & cooperation						
Independent work						
Leadership skills						
Time management skills						
Decision making skills						
Ability to use technology						
Technical skills						

7. What are the basic technical skills that are vital in your organization and you need employees graduated from secondary school possess?

   How do you evaluate the achievement of the employees in terms of the basic technical skills?
8. What would you expect from secondary schools and other stakeholders to prepare students for the world of work?

Appendix E

Interview guide for employees graduated from secondary school

Personal background: A. Position: _____ B. Year of experience (in the organization): _____

1. What is the purpose of secondary education? How do you evaluate the role of secondary education in preparing students for the world of work?
2. What was your plan while you were attending secondary school (higher education or employment)? Do you think that you achieved your goal? What are the major factors contributing for the achievements or challenges that you are facing?
3. How do you evaluate relevance of secondary education to prepare students for work (governmental employment and non-governmental employment)?
4. What are the knowledge, attitudes and skills your organization demand from you as employee? (Team work and collaboration, problem solving, creativity, critical thinking, effective communication, self management, time management and others).
5. Do you think that you acquired the knowledge, skills and attitudes you need to be effective in the workplace as employee?

   How do you evaluate your performance as employee (use to the following skills as criteria)?

Work Skills	Scale					
	VH	H	M	L	VL	Not at all
Listen and communicate effectively						
Ability to learn and adapt to work environment						
Self management skills						
Time management skills						
Think creatively						
Solve problems independently						
Manage oneself at work						
Work ethics						
Work in teams or groups						
Ability to use technology						
Independent work						
Critical thinking skills						
Problem solving skills						
Technical skills						

6. How do you evaluate the balance between the knowledge, attitudes and skills included in secondary school curriculum (textbooks)?

   How do you see the balance between the theoretical knowledge, attitudes and work skills you acquired at secondary school level?
7. How do you evaluate the teaching strategies and assessment techniques employed in your high school classrooms? Do you think that they were appropriate to prepare you for work? Which one was not adequately emphasized during instruction and in the assessment?
8. How do you evaluate teachers' competence and availability of instructional resource and facilities that are important to prepare students for the world of work?
9. Did you get the chance to experiment (in laboratory) and observe different industries and historical places as part of educational tour/ field trip while you were secondary school students? Explain
10. What are the basic technical skills your organization expects from you as employee?

    How do you evaluate your achievement in terms of the basic technical skills?
11. What should secondary schools and other stakeholders do to prepare students for the work?

Appendix F

Document Analysis (Qualitative and qualitative methods) **Guide (unit of analysis and category- Education policy, curriculum framework and for textbooks)**

1. Content analysis (qualitative method) of Education policy: How secondary education and the work skills (world of work) are addressed in the education policy.

- **Units of analysis:** aim of education, curriculum and assessment policy (in education policy) and education structure

Documents	Unity of Analysis	Categories	Subcategories(Indicators)
Education policy	Aim of education	Cognitive	
		Interpersonal	
		Intrapersonal	
	Curriculum and Instruction	Cognitive	
		Interpersonal	
		Intrapersonal	
	Assessment and evaluation	Cognitive	
		Interpersonal	
		Intrapersonal	

2. Content analysis (qualitative and quantitative methods) of curriculum framework: What goal, vision, values, curriculum approach, curriculum structure, learning areas, key competencies, and teaching method and assessment techniques that are prescribed to prepare secondary school curriculum materials and to be implemented during instruction are included in the curriculum framework?

- **Units of analysis** - goal, vision, values, curriculum approach, curriculum structure, learning areas, key competencies, teaching method and assessment techniques (in curriculum framework of Kg-Grade 12)

Documents	Unity of Analysis	Categories	Subcategories(Indicators)
Curriculum framework (Kg-G12)	Vision	Cognitive	
		Interpersonal	
		Intrapersonal	
	Principles/values	Cognitive	
		Interpersonal	
		Intrapersonal	
	Key competencies	Cognitive	
		Interpersonal	
		Intrapersonal	
	Learning areas	Cognitive	
		Interpersonal	
		Intrapersonal	
	Instruction	Cognitive	
		Interpersonal	
		Intrapersonal	
	Assessment	Cognitive	
		Interpersonal	
		Intrapersonal	

3. Content analysis (qualitative and quantitative) of secondary school textbooks: To understand:

i. The work skills addressed in the curriculum: Category A

ii. The emphasis given to the three domains of competencies and the area of focus of the curriculum across the sub-domains of each competence: Category B

- **Units of analysis:** Contents, objectives, review activities and end of unit exercises
- **Category A:** Cognitive domain, interpersonal (affective) domain, intrapersonal domain of competencies
- **Category B:** Cognitive domain, affective domain and psychomotor domain of learning

Format for category 'A'

Subject	Chapter	Categories 'A'	Sub-categories	Units of analysis		
				Objectives	Activities	Exercises
		Cognitive	Critical thinking			
			Creativity & innovation skill			
			Decision making			
			Problem solving			
		Interpersonal	Communication			
			Teamwork and collaboration			
			Leadership			
		Intrapersonal	Independent learning			
			Self management			
			Planning & time management			
			Self evaluation			

Format for Category B

Subject	Chapter	Unit of analysis	Category 'B'	L1		L2		L3		L4		L5		L6	
				f	%	f	%	f	%	f		%		f	
		Objectives	Cognitive												
			Affective												
			Psychomotor												
		Activities	Cognitive												
			Affective												
			Psychomotor												
		End of unit exercises	Cognitive												
			Affective												
			Psychomotor												

Appendix G

Analysis of Education policy

No	Issue addressed	skill	Pages	Remark
1	One of the aims of education is to strengthen the individual's and society's problem-solving capacity,……	problem-solving, cooperation, use of technology,	1, 4, 7	Aim of education
2	Cultivate the cognitive, creative, productive and appreciative potential of citizens by …….	Cognitive (but general), creative, attitude	8	General objective
3	To develop and enrich students' inquisitive ability and raise their Creativity and interest in aesthetic.	Critical thinking, creativity, attitude	8-9	Specific objective
4	To make education a supportive tool for developing traditional technology, and for utilizing modern technology.	Technology	10	Specific objective
4	To provide education that promote the culture of respect for work, positive work habits and high regard for workmanship	Attitude for work	10	Specific objective
5	Ensure that the curriculum developed and textbooks prepared at central and regional levels, are based on sound pedagogical and psychological principles	pedagogical and psychological principles (but not specific pedagogy and psychological principles are mentioned)	12-13	Curriculum preparation
6	Basic education will focus on literacy, numeracy, environment, agriculture, crafts, home science, health services and civics.	Subjects for work (but for grade 9-10) these subjects are not addressed	16	Structure of education

Key: All are general to all levels of education; not specific to secondary education

Key: The goals aren't clearly stated in line with world of work and preparation for work alignment aren't clearly stated

Appendix H

Indicators of Work skills

No	Work skills	Descriptions	Elements
1	Critical thinking Skills	-Intentional, goal-directed, reflective thinking; evaluate and make judgments; learn new concepts	• Assess problems involving the use of available resources . Flexibility and open-mindedness; • Willingness to abandon non-productive strategies in an attempt to self-correct; • Verbal reasoning; • Argument analysis; • Hypothesizing and undertaking a systematic process to check evidence; • Estimating likelihood and uncertainty
2	Communication Skills	-Ability to articulate thoughts and ideas through oral and written communication -Ability to convey information effectively so that it is received and understood; appropriate verbal/ nonverbal communication with colleagues, managers and customers/others	-Listening and understanding -Speaking clearly and directly - Writing to suit the needs of the audience - Negotiating responsively -Reading independently -Sharing information - Presentation
3	Teamwork	Ability to work with others towards a common goal; ability to negotiate	-Working with different people -Working as an individual and as a member of a team -Applying teamwork skills to a range of situations -Coaching, mentoring and giving feedback
4	Collaboration	Ability to work cooperatively with others	-Engage in positive interactions with peers -Work on teams consisting of diverse members and skill -Participate in cooperative groups or with a partner with specific roles and a shared task -contribute fairly to the task, suggest alternatives, discuss options, and

			show respect for others -Negotiate corrections and adaptations to team -Participate as team leaders or effective team members in project assignments, and organize work -Valuing the individual contributions made by each team member.
5	Problem-solving	Ability to identify problems and devise solutions	-Analyzing facts & testing assumptions - Applying a range of strategies to problem-solving -Developing creative, innovative solutions - Developing practical solutions - Showing independence and initiative in identifying problems & solving them -Solving problems in teams
6	Decision-making	- the choice of the most appropriate solution among possible alternatives	-ability to synthesize different available possible courses of action and to generate one's own course of action -ability to think of diverse courses of action -ability to take decisions or arrive at a conclusion on the basis of valid reasons or logic -interpret information and draw conclusions
6	Creativity	Ability to think in new ways of doing things, different from the routine ways, generate new ideas and solutions,	-Create innovative and novel ideas or solutions to a problem or situation. -Display divergent thinking - Pursue their curiosity and interests through inquiry-based projects and tasks. -pose unfamiliar questions, and arrive at unexpected answers - raise fresh ways of thinking,
8	Time management	manage one's use of time (planning, prioritizing, organizing)	-Being punctual and meeting deadlines -ablity to effectively plan their time

			-Being a reliable, honest and ethical employee
9	Leadership	Ability to ead in activities	-Coaching, mentoring & motivating others -Giving & receiving constructive feedback - Ability to supervise members of a group. -Ability to understand and take turns as a leader and follower alternatively. -Ability to guide and inspire others
10	Intrapersonal skills	The personal skills, attitudes and behaviours that drive one's potential actions	Self-discipline, ability to learn independently, flexibility and adaptability, self-awareness, perseverance, self-motivation, compassion, integrity, self-respect

Appendix I

Objectives Included in Textbooks

Chemistry

Grade 9	Grade 10
Unit 1	**Unit 1**
• comprehend Dalton's atomic theory and modern atomic theory; • understand the discovery of the electron and the nucleus; • know the terms like atomic number, mass number, atomic mass, isotope, energy level, valence electrons, and electron configuration; • understand the Dalton, Thomson, Rutherford, Bohr and the quantum mechanical atomic models; • develop skills in determining the number of protons, electrons, and neutrons of atoms from atomic numbers and mass numbers, • develop skills in calculating the atomic masses of elements that have isotopes, • develop skills in writing the ground-state electron configurations of atoms using sub-energy • Demonstrate scientific inquiry skills: observing, comparing and contrasting, communicating, asking questions, and applying concepts. • describe Dalton's atomic theory; • describe modern atomic theory • Compare and contrast Dalton's atomic theory with modern atomic theory. • explain the discovery of the electron; • explain the discovery of the nucleus; • Explain the discovery of the neutron. • write the relative charges of an electron, a proton, and a neutron; • tell the absolute and relative masses of an electron, a proton, and a neutron; • tell the number of protons and electrons in an atom from the atomic number of the element; • explain the terms atomic mass and isotope, and • calculate the atomic masses of elements that have isotopes. • name the five atomic models, • describe Dalton's, Thomson's and Rutherford's atomic models,	• know the historical development of organic chemistry and the classification of organic compounds; • know the general formulas of alkanes, alkenes, alkynes, alcohols, aldehydes, ketones, carboxylic acids and esters; • develop skills in naming and writing the molecular and structural formulasof simple alkanes, branched-chain alkanes, simple alkenes, branched-chain alkenes, simple alkynes, alcohols, aldehydes, ketones, carboxylic acids and esters; • understand isomerism and know possible isomers of alkanes, alkenes and alkynes; • know the major natural sources of hydrocarbons; • understand the physical and chemical properties and the general methods of preparation of alkanes, alkenes, alkynes, benzene and alcohols; • know the uses of organic compounds in the manufacture of plastics, beverages, pharmaceuticals, soaps and detergents, dry cleaning chemicals, fuels, pesticides, and herbicides; • demonstrate scientific inquiry skills: observing, classifying, communicating, measuring, asking questions, interpreting data, drawing conclusions, applying concepts, predicting and problem solving. • narrate the historical development of organic compounds; • define the term functional group; • classify organic compounds based on their functional groups. • define hydrocarbons; • define saturated hydrocarbons; • define homologous series; • write the general formula of alkanes; • write the first ten members of alkanes; • write the molecular formulas of alkanes from the given number of carbon explain the physical properties of alkanes; • write the structural formulas of the first ten alkanes; • apply IUPAC rules to name straight and branched

• state Bohr's postulates, • describe Bohr's model, • describe the quantum mechanical model, • describe main-energy level and sub-energy level, • define the term electronic configuration, • write the ground state-electronic configuration of the elements, • draw diagrams to show the electronic configuration of the first 18 elements, • write the electronic configuration of the elements using sub–energy levels, • write electronic configuration of elements using noble gas as a core and • Describe valence electrons. • understand the periodic classification of the elements; • develop skills in correlating the electron configuration of elements with the periodicity of the elements, and in predicting the trends of periodic properties of elements in the periodic table; • appreciate the importance of classification in chemistry; • demonstrate scientific inquiry skills: observing, inferring, predicting, classifying, comparing and contrasting, making models, communicating, measuring, asking questions, interpreting illustrations, drawing conclusions, applying concepts, and problem solving. • Describe periodicity. • state Mendeleev's and modern periodic law; • describe period and group; • explain the relationship between the electronic configuration and the structure of the modern periodic table; • describe the three classes of the elements in the modern periodic table; • explain the four blocks of the elements as related to their electronic configuration in the modern periodic table; • tell the block of an element from its electronic configuration; • give group names for the main group elements; • classify the periods into short, long, and incomplete periods; • tell the number of groups and periods in the modern periodic table; • tell the number of elements in each period; • predict the period and group of an element from	chain alkanes; • define isomerism as the way compounds having the same formula differ in the way their atoms are arranged; • define structural isomerism; • write possible structural isomers for C4H10, C5H12 and C6H14; • describe the general method for the preparation of alkanes in the laboratory; • prepare methane in a laboratory by the decarboxylation method; • carry out a project to produce biogas from cow dung; • explain the chemical properties of alkanes. • define unsaturated hydrocarbons; • define alkenes; • write the general formula of alkenes; • write the molecular formula for the first nine members in the homologous series • define alkynes; • write the general formula of alkynes; • write the molecular formula for the first nine members in the homologous series • write the molecular formulas of alkenes and alkynes from the given number of carbon atoms • describe the physical properties of alkenes and alkynes; • apply IUPAC rules to name straight-and branched-chain alkenes and alkynes; • write the structural formulas of alkenes and alkynes up to ten carbon atoms; • write the possible structural isomers for C4H8 and C5H10; • define geometric (cis-trans) isomerism; • give examples of molecules that show geometric isomerism; • construct models that show cis-trans isomerism; • describe the general methods for the preparation of alkenes in a laboratory; • prepare ethylene in the laboratory by the dehydration of ethanol; • describe the general method for preparation of alkynes in a laboratory; • prepare acetylene in the laboratory by the reaction of CaC2 with water; • test for unsaturation of ethylene and ethyne; • explain chemical properties of alkenes; • explain chemical properties of alkynes; • explain the uses of ethylene and acetylene; • compare and contrast the properties of ethane, ethene

its atomic number; and
- tell the block and group of an element from its electronic configuration
- explain the general trends in properties of the elements as they move down a group of the periodic table;
- explain the general trends in properties of elements across a period;
- deduce the properties of an element from its position in the periodic table;
- make a chart to show the trends in properties of elements in the periodic table.
- Describe the advantages of periodic classification in studying chemistry.

UNIT 2

- discuss the formation of ionic, covalent, and metallic bonds;
- know the general properties of substances containing ionic, covalent, and metallic bonds;
- develop the skills of drawing the electron-dot (Lewis structures) for understand the origin of polarity within molecules;
- appreciate the importance of intermolecular forces in plant and animal life;
- demonstrate scientific inquiry skills: observing, predicting, making model,
- communicating, asking questions, measuring, applying concepts, comparing and contrasting, relating cause and effects.
- define chemical bonding;
- explain why atoms form chemical bonds.
- explain the term ion;
- illustrate the formation of ions by giving examples;
- define ionic bonding;
- describe the formation of an ionic bond;
- give examples of simple ionic compounds;
- draw Lewis structures or electron-dot formulas of simple ionic compounds;
- explain the general properties of ionic compounds; and investigate the properties of given samples of ionic compounds.
- define covalent bonding
- describe formation of a covalent bond
- draw Lewis structures or electron-dot formulas of simple covalent molecules
- give examples of different types of covalent molecules
- make models of covalent molecules to show

and ethyne.
- define the term aromatic hydrocarbons;
- draw the structure of benzene;
- describe the main physical properties of benzene;
- explain the chemical reactions of benzene;
- carry out test-tube reactions with Br2 in CCl4, KMnO4, concentrated H2SO4.
- list the major natural sources of hydrocarbons;
- describe natural gas;
- define crude oil;
- explain the fractional distillation of crude oil;
- mention the products of the fractional distillation of crude oil;
- tell the uses of petroleum products;
- describe the composition of coal;
- explain the destructive distillation of coal.
- define alcohols;
- tell the functional group of alcohols;
- classify alcohols based on the number of hydroxyl groups;
- write the general formulas of monohydric alcohols;
- write the molecular formulas and the names of the first six members of the
- give the IUPAC names for the given alcohols;
- classify monohydric alcohols based on the number of alkyl groups attached to the carbon atom carrying the hydroxyl group;
- give some examples for primary, secondary and tertiary alcohols;
- describe the physical properties of alcohols;
- explain general methods of preparation of alcohols;
- explain the industrial preparation of ethanol;
- perform an experiment to prepare ethanol from sugar;
- explain the chemical reactions of alcohols such as oxidation, reaction with active metals, esterification and dehydration;
- carry out an activity to show chemical reactions of alcohols with active metals;
- write the general structural formula of aldehydes;
- write the molecular formulas and names of simple aldehydes;
- write the general structural formula of ketones;
- write the molecular formulas and names of simple ketones;
- write the general structural formula of carboxylic acids;
- write the molecular formulas and names of simple carboxylic acids;
- write the general structural formula of esters

single using sticks and balls or locally available materials, • explain polarity in covalent molecules, • distinguish between polar and non-polar covalent molecules, • define coordinate (dative) covalent bond, • illustrate the formation of coordinate covalent bond using appropriate examples, • explain the general properties of covalent compounds, and • investigate the properties of given samples of covalent compounds. • explain the formation of metallic bond; • explain the electrical and thermal conductivity of metals in relation to metallic bonding; • define inter-molecular forces; • explain hydrogen bonding; • explain the effects of hydrogen bonding on the properties of substances; • describe Van der Waal's forces; • explain dipole-dipole forces; • give examples of molecules with dipole-dipole forces; • explain dispersion forces; • give examples of molecules in which dispersion force is important; and compare and contrast the three types of intermolecular forces. **UNIT 3** • understand the fundamental laws of chemical reactions and how they are applied; • develop skills in writing and balancing chemical equations; • understand energy changes in chemical reactions; • know types of chemical reactions; • develop skills in solving problems based on chemical equations (mass-mass, volume-volume and mass-volume problems); • develop skills in determining limiting reactant, theoretical yield, actual yield, and percentage yield; • understand oxidation-reduction reactions and analyze redox reactions by specifying the oxidizing agents and reducing agents, the substance reduced or oxidized; • understand the rate of chemical reaction, the state of a chemical equilibrium and factors affecting them; • demonstrate scientific enquiry skills: observing, inferring, predicting, classifying, comparing and	• write the molecular formulas and names of simple esters. • discuss the uses of organic compounds in the manufacture of beverages; • discuss the uses of organic compounds in the manufacture of pharmaceuticals; • discuss the uses of organic compounds in the manufacture of soaps and detergents; • discuss the uses of organic compounds in the manufacture of dry cleaning agents; • discuss the uses of organic compounds in the manufacture of fuels; • conduct an experiment to prepare soap from naturally existing esters • discuss the uses of organic chemicals in the manufacture of pesticides and herbicides; • discuss the importance and manufacture of urea **UNIT 2** • understand the classification of inorganic compounds on the basis of their composition and/or their chemistry • know the types of oxides and their chemical properties; • understand the Arrhenius, Brønsted-Lowry and Lewis concepts of acids and bases; • understand the classification of acids and salts; • know the general properties, preparations and uses of common acids, bases • understand the differences between strong and weak acids/bases, and concentrated and dilute acids/bases • recognize the corrosive nature of acids and bases, and exercise the necessary precautions in handling and using them; • develop skills for identifying acidic, basic and neutral compounds • develop skills in calculating, pH, pOH, H+ ion and OH– ion concentration of a solution • know essential plant nutrients, fertilizers and pesticides; • demonstrate scientific inquiry skill: observing, classifying, • comparing and contrasting, inferring, predicting, communicating, measuring, asking questions, interpreting data, drawing conclusion, applying concepts, relating cause and effect and problem solving • define inorganic compounds; and • classify inorganic compounds as oxides, acids, bases and salts.

contrasting, communicating, measuring, asking questions, designing experiments, interpreting data, drawing conclusions, applying concepts, relating cause and effect, and problem-solving. • define chemical reaction; and give some examples of chemical reactions • state the law of conservation of mass and illustrate the law • demonstrate the law of conservation of mass • state the law of definite proportion and illustrate it • demonstrate the law of definite proportion • State the law of multiple proportion and illustrate it • describe the conventions used to write chemical equations; • balance chemical equations, using the inspection method; • balance chemical equations, using the Least-Common-Multiple (LCM) method. • explain energy changes in chemical reactions; • define endothermic and exothermic reactions; • describe endothermic and exothermic reactions; • illustrate endothermic and exothermic reactions using diagrams; • conduct simple experiment to demonstrate exothermic and endothermic reactions; • describe the importance of chemical changes in production of new substances and energy. • list the four types of chemical reactions; • define combination reaction and give examples; • conduct some experiments on combination reactions in groups • define decomposition reaction and give examples; • conduct some experiments on decomposition reactions in group; • define single displacement reactions and give examples; • conduct some experiments on simple displacement reactions in groups; • define double displacement reaction and give examples; and • conduct some experiments on double displacement reactions in groups. • deduce mole ratios from balanced chemical equations; • solve mass-mass problems based on the given chemical equation;	• define oxides; • classify oxides as acidic, basic, amphoteric, neutral and peroxides; • define acidic oxides and give examples; • explain the chemical properties of acidic oxides; • define basic oxides and give examples; • explain the chemical properties of basic oxides; • conduct experiments to distinguish acidic oxides from basic oxides; • compare and contrast acidic and basic oxides; • define amphoteric oxides and give examples; • explain the chemical properties of amphoteric oxides; • discuss the salt forming nature of acidic, basic and amphoteric oxides; • define neutral oxides and give examples; • define peroxides and give examples; • explain the chemical properties of peroxides; and • conduct an experiment to distinguish peroxides from other oxide • define acids in terms of Arrhenius, Brønsted-Lowry and Lewis; • give examples of acids based on Arrhenius, Brønsted-Lowry and Lewis concepts; • classify acids as monoprotic and polyprotic based on the numbers of ionizable hydrogen atoms; • group acids as binary and ternary based on the number of elements they contain; • explain the general properties of acids; • define strong and weak acids; • distinguish between strong and weak acids; • define concentrated and dilute acids; • describe the conceptual difference between strong and concentrated acids • use the necessary precautions while working with acids; • define pH and describe the pH scale; • identify a given pH labelled solution as acidic, basic or neutral; • perform activities to determine the pH of some common substances using universal indicator or a pH-meter • calculate the pH of a given acidic solution; • calculate the hydrogen ion concentration from the given information; • perform activities to investigate some physical properties of acids; • perform activities to investigate some chemical properties of acids; • explain the direct combination of elements, the

• define molar volume; • state Avogadro's principle; • solve volume-volume problems based on the given chemical equation; • solve mass-volume problems based on the given chemical equation; • define limiting and excess reactants; • determine limiting and excess reactants of a given chemical reaction; • show that the amount of product formed in a chemical reaction is based on the limiting reactant; • define the term theoretical yield, actual yield and percentage yield; and • calculate the percentage yield of a chemical reaction from given information • define redox reactions; • define the terms oxidation and reduction in terms of electron transfer; • define oxidation number (oxidation state), • state oxidation number rules, • determine the oxidation number of an element in a given formula; • describe the oxidizing and reducing agents; • analyze a given redox reaction by specifying the substance reduced and the substance oxidized, and also the oxidizing and reducing agents • Distinguish between redox and non-redox reactions. • define rate of reaction; • describe rate of reaction using a graph; • carry out an experiment to illustrate the relative rate of reactions; • list the pre-conditions for a chemical reaction to occur; • explain how collision, activation energy and proper orientation of reactants cause a chemical reaction to occu • list factors that affect rate of chemical reaction; • explain the effects of changes in temperature, concentration or pressure and surface area on the rates of a chemical reaction; • explain the effect of catalysts on the rates of chemical reaction; • carry out an activity on how the factors affect the rate of chemical reaction; • define the terms reversible reaction and irreversible reaction; • define chemical equilibrium;	reaction of acidic oxides with water, formation of volatile acids from non-volatile acids as the three methods of preparation of acids • conduct simple experiments to prepare acids in a laboratory; • describe the uses of three common laboratory acids • define bases in terms of the concepts of Arrhenius, Brønsted-Lowry and Lewis; • give examples of bases based on Arrhenius, Brønsted-Lowry and Lewis concepts • explain the general properties of bases; • define strong and weak bases; • distinguish between strong and weak alkalis (soluble bases); • define concentrated and dilute alkalis; • distinguish between concentrated and dilute alkalis (soluble bases); • use the necessary precautions while working with bases; • define pOH; • show the mathematical relationship between pH and pOH; • calculate the pOH of a given solution; • calculate the concentration of hydroxide ions from the given information; • conduct activities to investigate some chemical properties of bases; • explain the reaction of active metals with water, the reaction of basic oxideswith water, and double displacement reactions as the three methods of preparation of bases • conduct simple experiments to prepare bases in a laboratory • describe the uses of the three common laboratory bases (NaOH, Ca(OH)2 and NH3). • define salts; • give examples of salts; • classify salts as acidic, normal and basic salts; • explain the direct combination of elements, the reaction of acids with bases and the reaction of acids with metals as methods of salt preparation • conduct simple experiments to prepare a salt by neutralization; • list some important salts and discuss their uses; • explain the properties of salts; • describe the chemical tests of some salts by conducting activities; • mention the essential nutrients of plants; • describe the functions of nitrogen, phosphorus and

- describe the characteristics of chemical equilibrium;
- write the expression for equilibrium constant of a reversible reaction;
- state Le Châtelier's principle; and
- use Le Châtelier's principle to explain the effect of changes in temperature, pressure and concentration of reactants at equilibrium.

UNIT 4

- Understand the kinetic molecular theory and properties of the three physical states of matter
- Know the behavior of gases by using the variables volume, temperature, pressure and number of moles
- Know terms like ideal gas, diffusion, evaporation, boiling…..
- Understand gas law
- Developing skills in solving problems to which the gas laws apply
- Perform activities to illustrate gas laws
- Carryout experiments to determine the boiling points of liquids and the melting points of solids
- Demonstrate an experiment to show phase changes
- Demonstrate scientific inquiry skills: observing, predicting, comparing, interoperating, applying concepts and making generalizations
- Name the three physical states of matter.
- give examples for each of the three physical states of matter;
- state kinetic theory of matter;
- explain the properties of the three physical states of matter in terms of kinetic theory;
- compare and contrast the three physical states of matter.
- explain the assumptions of kinetic molecular theory of gases;
- describe the properties of gases using kinetic molecular theory;
- describe the behavior of gases by using the variables V (volume), T (Temperature) P (pressure) and n (number of moles);
- state Boyle's law;
- perform an activity to show changes in volume and pressure of gases to illustrates Boyle's law;
- apply Boyle's law in solving problems;
- state Charles' law;
- perform an activity to show changes in volume and temperature of gases to illustrate Charles' potassium in plant growth
- define fertilizers;
- list some common fertilizers;
- explain the importance of fertilizers; and
- list some common inorganic compounds that are used as pesticides and herbicides

UNIT 3

- understand how a chemical reaction produces an electric current and howelectricity brings about chemical reactions in electrochemical cells
- understand the differences between metallic conduction and electrolytic conduction
- develop skills in writing the oxidation half-reaction, reduction half-reaction and cell reaction for the electrolysis of molten electrolytes that occur in electrolytic cells;
- know three types of voltaic cell;
- understand the difference between electrolytic cells and voltaic cells
- appreciate the industrial applications of electrolysis in the production of certain metals, non metals and chemicals and electroplating, and purification of metals
- demonstrate scientific inquiry skills: observing, comparing and contrasting, measuring, asking questions, designing experiment, interpreting data, predicting, classifying, communicating and problem solving.
- explain electrochemistry;
- define electrical conductivity;
- explain metallic conductivity;
- explain electrolytic conductivity;
- distinguish between metallic and electrolytic conduction;
- distinguish between weak and strong electrolytes;
- use conductivity apparatus to test the conductivity of substances
- define the term electrolysis;
- define the terms electrode, anode, cathode, electrolyte, anion and cation
- describe an electrolytic cell;
- draw and label a diagram of an electrolytic cell;
- define the terms half-cell reaction and cell reaction;
- write the oxidation half-reaction, reduction half-reaction and cell reaction for the electrolysis of molten or fused electrolytes
- perform an activity to show the electrolysis of molten electrolytes
- construct a simple galvanic cell, using strips of zinc,

law;
- apply Charles' law in solving problems;
- derive combined gas law equation from Boyle's law and Charles' law;
- use the combined gas law to calculate changes in volume, pressure or temperature
- define an ideal gas;
- derive an ideal gas equation from Boyle's law, Charles' law and Avogadro's law;
- compare the nature of real gases with ideal gases;
- solve problems related to ideal gas equation;
- define diffusion;
- state Graham's law of diffusion;
- carry out an activity to compare the rate of diffusion of two different gases;
- apply Graham's law of diffusion in solving problems
- explain the terms: evaporation, boiling, condensation, vapor pressure; boiling point, molar heat of vaporization and molar heat of condensation;
- carry out an activity to demonstrate the concept of vapor pressure; and
- carry out an activity to determine the boiling points of water and ethanol.
- explain the terms melting, fusion, sublimation, melting point, freezing point, molar heat of solidification;
- describe phase changes;
- explain temperature changes associated with phase changes;
- determine melting point of ice; and
- demonstrate an experiment to show the phase changes from ice to liquid water and then to water vapor.

Grade 11

Unit 1

- understand the scope of chemistry;
- select and use appropriate SI units;
- understand the causes of uncertainty in measurement;
- express the result of any calculation involving experimental data to the
- appropriate number of decimal places or significant figures;
- use scientific methods in solving problems;
- demonstrate an understanding of experimental skills in chemistry;
- demonstrate a knowledge of laboratory copper, $ZnSO_4$ and $CuSO_4$ solutions
- mention different types of voltaic cells;
- describe how voltaic cells can be used to make commercially useful batteries;
- distinguish between voltaic cell and an electrolytic cell;
- describe voltaic cells
- describe selected industrial applications of electrolysis;

Unit 4

- know the renewable and non-renewable natural resources and appreciate their importance to industry as raw materials;
- know the extraction, chemical properties and uses of aluminium, iron, copper, nitrogen, phosphorus, oxygen, sulphur and chlorine;
- know the production and chemical properties of nitrogen, phosphorus, oxygen, sulphur and chlorine
- know some chemical and related industries in Ethiopia
- understand the important steps in the production of glass, ceramics, cement, sugar, paper and pulp
- know how tanning is carried out and how food is packed and preserved;
- know the three types of environmental pollution and the names of the pollutants
- understand the causes and effects of air, water and land pollution and know the main methods to reduce them
- demonstrate scientific inquiry skills such as observing, classifying, communicating, asking questions, applying concepts and problem-solving
- list general characteristics of chemical industries;
- define natural resources;
- list natural resources;
- classify natural resources as renewable and non-renewable
- define the chemical industry as a firm that involves the taking of raw materials from the environment and turning them into usable products by chemical means
- describe the applications of minerals in industry
- outline the extraction of aluminium by the Hall process
- describe the main physical and chemical properties of aluminium;
- describe the uses of aluminium;
- outline the extraction of iron by the blast furnace;
- briefly describe the conversion of pig iron in steel;
- describe wrought iron;

procedures; • demonstrate scientific enquiry skills including observing, inferring, predicting, comparing and contrasting, communicating, analyzing, classifying, applying, theorizing, measuring, asking questions, developing hypotheses, performing and designing experiments, interpreting data, drawing conclusions, making generalizations and problem solving • define chemistry; • distingiuish the major fields of chemistry • distinguish the sub-divisions of the branches of chemistry • list and describe the seven SI units and their prefixes; • write the names and symbols of derived SI units; • use the factor-label method for solving problems and conversion to SI units; • describe uncertainty of measurement • identify the digits that are certain and the ones that are uncertain given a number representing a measurement • identify the causes of uncertainity in measurement; • define precision and accuracy; • estimate the precision that is possible for any instrument, you use in the laboratory; • explain system errors and random errors; • analyze the given data in terms of precision and accuracy; • define decimal places; • determine the number of decimal places in a calculated result; • define significant figures; • determine the number of significant figures in a calculated result; • use scientific notation in writing very large or very small numbers • define scientific method; • describe the major steps of scientific method; • use scientific methods in solving problems; • demonstrate some experimental skills in chemistry • describe the procedures of writing laboratory reports **UNIT 2** • understand the historical development of atomic structure	• describe the main chemical properties of iron; • describe the uses of iron; • outline the extraction of copper; • describe the main chemical properties of copper; • describe the uses of copper; • outline the production of nitrogen; • describe the main chemical properties of nitrogen; • outline the production of phosphorus; • describe the main chemical properties of phosphorus; • outline the production of oxygen; • describe the main chemical properties of oxygen; • outline the production of sulphur; • describe the main chemical properties of sulphur; • outline the production of chlorine; and • describe the chemical properties of chlorine. • define industry; • list some industries in Ethiopia • describe the general characteristics of industries; • outline the important steps in the productions of ceramics; • mention some uses of ceramics; • outline the important steps in the production of cement; • outline the important steps in the production of sugar; • outline the important steps in the production of pulp and paper; • explain how tanning is carried out; • describe the application of the chemical preservation of skin and hides; • mention some uses of skin and hides; • explain the process of food packing and preservation; and • present a report to the class after visiting a nearby food factory. • define pollution • list the three types of pollution; • list the names of common air pollutants; • describe the effects of air pollutants; • describe some of the main methods used to reduce air pollution; • describe the different types of industrial water pollutants; • explain some of the factors involved in water pollution and their effects; • describe some of the methods used to reduce water pollution; • explain some of the factors involved in land pollution; • describe some of the main methods used to reduce

- explain the experimental observations and inferences made by some famousscientists to characterize the atom
- list and describe the subatomic particles;
- explain the terms “atomic mass” and “isotope
- understand electromagnetic radiation, atomic spectra and Bohr’s models of the atom; do calculations involving atomic structure
- describe the quantum mechanical model of the atom, related postulates and principles
- demonstrate an understanding of periodic law and how electronic configuration of atoms are related to the orbital diagrams and can explainperiodic trends;
- describe scientific inquiry skills along this unit: inferring, predicting,classifying, comparing, and contrasting, communicating, asking questionsand making generalizations
- State briefly the historical development of atomic nature of substances
- state postulates of Dalton’s atomic theory;
- state postulates of Modern atomic theory
- state the laws of conservation of mass, definite proportions, multiple proportions and the basis of each of these laws
- discuss the discovery of the electron;
- describe the properties of cathode rays;
- define the terms: radioactivity, radioactive decay and radio-isotope;
- describe the common types of radioactive emissions;
- discuss the alpha scattering experiment;
- describe the major contribution of experiments by Thomson, Millikan and Rutherford concerning atomic structure
- describe make-up of the nucleus;
- define atomic mass;
- define isotope; and
- calculate the relative atomic mass (atomic mass) of naturally occurring isotopic elements.
- characterize electromagnetic radiation (EMR) in terms of wave length, frequency and speed
- calculate the wave length and frequency of EMR;
- explain that light has both wave and particle natures;
- define photon as a unit of light energy
- explain how photon theory explains the photoelectric effect and the relationship between photons absorbed and land pollution; and

carry out a project on the effects(s) of an industry on environment.

Grade 12

Unit 1

- know the types of solutions;
- understand the process of solution formation, the rate of solution, the heat of solution and solubility;
- describe the dependence of solubility on the temperature and pressure of the solution
- know how to solve problems involving the concentration of solutions and to express the result in various units;
- describe, the behaviour of ionic solute in unsaturated, saturated and supersaturated solutions using the concept of equilibrium;
- prepare solutions of a required concentration by dissolving a solute or diluting a concentrated solution
- understand the relationship between the colligative properties of solutions and know how to solve problems involving colligative properties of solutions
- describe scientific inquiry skills along this unit: observing, classifying, comparing and contrasting, measuring, asking questions, drawing conclusion, applying concept and problem solving
- define the terms mixture, homogeneous and heterogeneous mixture, solute, solvent, solution;
- distinguish between homogeneous and heterogeneous mixtures;
- describe suspensions and colloids.
- explain different types of solutions;
- give examples for each type of solution;
- after a visit to nearby gold smith, present a report to class on how jewellery gold is prepared
- explain how the “like dissolves like” rule depends on inter-particle forces of interactions and predict relative solubility;
- define rate of dissolution;
- define heat of solution, solvation energy and hydration energy;
- apply the concept of heat of solution to a solution of ammonium nitrate and sodium hydroxide crystals;
- explain how heat of solution is influenced by the inter-particle interaction forces
- describe the distinctions among unsaturated, saturated and supersaturated solutions;
- prepare a supersaturated solution of sodium phosphate;

electrons released • explain that emission spectra of atoms consist of series of lines; • state Bohr's assumption of energy of electrons in the hydrogen atom • explain that the line spectrum of hydrogen demonstrates the quantized nature of the energy of its electron • explain that atoms emit or absorb energy when they undergo transition from one energy state to another; • explain the shortcomings of the Bohr theory • calculate the radius of an electron orbit, velocity and the energy of the electron, using the Bohr model • state the Heisenberg uncertainty principle • describe the significance of electron probability distribution; • explain the quantum numbers n, l, ml and ms; • write all possible sets of quantum numbers of electrons in an atom; and • describe the shape of orbitals that are designated by s, p, and d. • explain the Aufbau principle; • explain the Pauli exclusion principle; • explain Hund's rule; and • write ground-state electronic configurations of multi-electron atoms • correlate the electron configuration of elements with the periodicity of elements; • give a reasonable explanation for shape of the periodic table; • classify elements as representative, transition and inner-transition elements • explain the general trends in atomic radius, ionization energy, electron affinity, electronegativity; and metallic character of elements within a period and group of the periodic table • write the advantages of the periodic classification of elements. **UNIT 3** • understand that a chemical bond is an attractive force between particles • demonstrate an understanding of the formation and general properties of substances containing ionic, covalent and metallic bonds • draw Lewis structures for simple ionic and	• explain the equilibrium nature of a saturated solutions; • define solubility and describe the factors that affect the solubility of substances; • investigate the effect of temperature on the solubility of sodium sulphate in water; • conduct an experiment to determine the solubility of table salt and sugar in water; • state Henry's law; • use Henry's law to calculate the concentration of gaseous solute in a solution. • define terms like solution, concentration, mass percentages, ppm and ppb of a solute in a solution; • calculate the mass percentage, ppm and ppb of a solute in a solution from given set of information • define mole fraction, molarity, equivalent mass, number of equivalents, normality and molality • calculate mole fraction, molarity, normality and molality of a solution from given set of information interconvert various concentration expressions. • Prepare molar solutions, normal solutions and molal solutions of different substances; • Explain dilution process and calculate the volume or concentration changes during the dilution of solutions; • Prepare a dilute solution from a concentrated solution. • Use stoichiometerically equivalent molar ratios to calculate the amounts of reactants and products in a reaction of pure and dissolved substance • explain the relationship between reacting ions, spectator ions, precipitation and solubility; • write net ionic equations. • define colligative properties: • list the important properties of solvents that are affected by the formation of a solution; • state Raoult's law • explain the change in the colligative properties of solvent when a certain solute is added; • explain the change in the colligative properties of solvent when a certain solute is added; • describe the Van't Hoff's factor; • calculate the vapour pressure, boiling point, and freezing point of a solvent after a given amount of solute is dissolved in it; • define osmosis and osmotic pressure of a solution; • calculate the osmotic pressure of a solution; and • compare and contrast change in colligative properties of electrolytic and non electrolytic solution.

covalent compounds; • understand the origin of polarity within molecules • describe the formation and nature of hydrogen bonds, dipole-dipole forces and London forces • know the three different but related bonding models (Lewis model, Valence bond model and Molecular orbital model) • recognize the usefulness of the bonding theories in explaining and predicting molecular properties(bond angle, bond length, bond energy, etc; • explain how the properties of a substance (solid or liquid) depends on the nature of the particles present and the type of intermolecular forces • appreciate the importance of intermolecular forces in plant and animal life • explain how the Valence Shell Electron Pair Repulsion (VSEPR) model can be used to predict molecular shape • Know the types of crystalline solid (ionic, molecular, covalent network, or metallic) formed by a substance and describe their properties conduct experiments to observe and analyze the physical properties of different substances to determine the type of bonding present • describe scientific enquiry skills along this unit: observing, inferring, • predicting, classifying, comparing and contrasting, making models, communicating, asking questions, applying concepts, relating cause and effect and making generalizations • describe the reason why atoms form chemical bonds; • state octet rule; • define chemical bonding; and • describe the types of chemical bonding and their mechanisms of the bonding • define ionic bonding; • use Lewis electron dot symbols to depict main group elements • describe ionic bonding using Lewis electron dot symbols; • list the favourable conditions for the formation of ionic bond; • explain the formation of ionic bonding; • give examples of ionic compounds; • define Lattice energy; • calculate lattice energy of ionic crystal from a	• explain the change in the colligative properties of solvent when a certain solute **UNIT 2** • understand the Arrhenius, Brønsted-Lowry and Lewis concepts of acids and bases; • understand the dissociation of water, weak monoprotic and polyprotic acids, and bases; • know how to solve equilibrium problems involving concentration of reactants and products, Ka, Kb, pH and pOH • understand the common-ion effect, buffer solutions, hydrolysis of salts, acidbase indicators and acid-base titrations • explain how buffering actions affect our daily lives, using some examples • determine the equivalents of acids and base, respectively, that are required to neutralize specific amounts of base and acid • predict, in qualitative terms, whether a solution of a specific salt will be acidic, basic or neutral • know how to solve problems involving concentration and pH of acid-base titration • describe scientific enquiry skills along this unit: classifying, communicating, • asking questions, applying concepts and making generalizations • define acid by the Arrhenius concept; • explain why proton exists bounded to water molecules, as H3O+, in all acid-base reactions; • give examples of Arrhenius acids; • define base using the Arrhenius concept; • give examples of Arrhenius bases; • define acid using the Brønsted-Lowry concept; • give examples of Brønsted-Lowry acids; • define base using the Brønsted-Lowry concept; • give examples of Brønsted-Lowry bases; • explain what conjugate acids and conjugate bases • identify the acid-base conjugate pairs from a given reaction; • write an equation for self-ionization of water and ammonia; • explain what is meant by amphiprotic species; • give examples of reactions of amphiprotic species; • define an acid by using Lewis concept; • give examples of Lewis acids • define a base using the Lewis concept; • give examples of Lewis bases. • describe the ionization of water;

given data using the Born-Haber • discuss the exceptions to octet rule; • describe the properties of ionic bonding; • carry an activity to demonstrate the effect of electricity on ionic compounds (PbI2 and NaCl); • carry an activity to investigate the melting point and solubility of some ionic compounds (NaCl and CuCl2). • define covalent bonding; • explain the formation of covalent bonding; • give examples of covalent molecules; • draw Lewis structures or electron dot formulas of some covalent molecules; • illustrate the formation of coordinate covalent bonding using examples; • define resonance structures; • draw resonance structures of some covalent molecules and polyatomic ions; • discuss the exceptions to the octet rule in covalent bonding; • distinguish between polar and non polar covalent molecules; • describe the properties of covalent molecules; • carryout an activity to investigate the effects of heat, electricity and some solvents on covalent compounds (naphthalene, graphite, iodine and ethanol); • describe the valence shell electron pair repulsion theory (VSEPR); • distinguish between the bonding pairs and non bonding pairs of electrons • describe how electron pair arrangements and shapes of molecules can be predicted from the number of electron pairs • explain why double bonds and lone pairs cause deviations from ideal bond angles • explain the term dipole moment with the help of a diagram; • describe the relationship between dipole moment and molecular geometry • describe how bond polarities and molecular shapes combine to give molecular polarity; • predict the geometrical shapes of some simple molecules; • construct models to represent shapes of some simple molecules; • define intermolecular forces; • name the different types of intermolecular forces; • explain dipole dipole interactions;	• derive the expression of ion product for water, Kw; • explain the effect of temperature on Kw; • explain why water is a weak electrolyte; • use Kw to calculate [H3O+] or [OH–] in aqueous solution; • define pH; • define pOH; • explain the relationship between pH and pOH; • calculate pH from [H+] and [H+] from pH; • calculate pOH from [OH–] and [OH–] from pOH; • write an expression for the percent ionization of weak acids or weak bases; • calculate the percent dissociation of weak acids and bases; • write the expression for the acid-dissociation constant, Ka; • calculate Ka for an acid from the concentration of a given solution and its pH • calculate [H+] and pH of an acidic solution from given values of Ka and the initial concentration of the solution • write the expression for the base-dissociation constant, Kb; • calculate Kb for a base from the concentration of a basic solution and its pOH; • calculate the [OH–] and pOH of a basic solution from a given value of Kb and the initial concentration of the solution. • define the common-ion effect; • explain the importance of the common-ion effect • define buffer solution; • give some common examples of buffer systems; • explain the action of buffer solutions and its importance in chemical processes; • calculate the pH of a given buffer solution; • demonstrate the buffer action of CH3COOH/CH3COONa • define hydrolysis; • explain why a salt of weak acid and strong base gives a basic solution; • explain why a salt of strong acid and weak base gives an acidic solution; • explain why salts of weak acids and weak bases give acidic, basic or neutral solutions. • define acid-base indicators; • write some examples of acid-base indicators; • suggest a suitable indicator for a given acid-base titration; • explain the equivalents of acids and bases;

- give examples of dipole dipole interaction;
- define hydrogen bonding;
- explain the effect of hydrogen bond on the properties of substances;
- give reason why H bonding is stronger than ordinary dipole dipole interaction;
- explain dispersion (London) forces
- give examples of dispersion forces; and
- predict the strength of intermolecular forces for a given pair of molecules
- explain how metallic bond is formed;
- explain the properties of metals related to the concept of bonding; and
- carryout an activity to investigate the conductivity, malleability and ductility of some metals and non-metals (Al, Cu, Fe, Sn, Zn, S, C charcoal, C graphite and Si).
- name two chemical bond theories;
- explain the valence bond theory;
- distinguish the Lewis model and the valence bond model;
- discuss the overlapping of orbitals in covalent bond formation;
- explain hybridization;
- show the process of hybridization involved in some covalent molecules;
- draw hybridization diagram for the formation of sp, sp2, sp3, sp3d and sp3d2 hybrids
- suggest the kind of hybrid orbitals on the basis of the electron structure of the central atom
- predict the geometrical shapes of some simple molecules on the basis of hybridization and the nature of electron pairs
- discuss the hybridization involved in compounds containing multiple bonds;
- explain bond length and bond strength;
- explain molecular orbital theory;
- describe molecular orbital-using atomic orbitals;
- describe bonding and anti bonding molecular orbitals
- draw molecular orbital energy level diagrams for homonuclear diatomic molecules
- write the electron configuration of simple molecules using the molecular orbital model;
- define bond order and determine the bond order of some simple molecules and molecule-ions
- determine the stability of a molecule or an ion using its bond order; and
- predict magnetic properties of molecules
- calculate the normality of a given acidic or basic solution;
- define acid-base titration;
- define end point;
- define equivalence point;
- distinguish between end point & equivalent point;
- discuss titration curves.

UNIT 3

- understand the terms system, open system, closed system and isolated system, spontaneous process, state and path function, intensive and extensive property, internal energy, heat and work
- understand the first and second laws of thermodynamics;
- compare the energy change observed when chemical bonds are formed and broken, and relate these changes to endothermic and exothermic reactions
- identify ways in which the terms reactant, product, and heat are combined to form thermodynamic equations representing endothermic and exothermic chemical change
- understand concepts such as enthalpy change, entropy change and free-energy changes
- determine the spontaneity of a given reaction;
- demonstrate scientific enquiry skills including: communicating, measuring, applying concepts and asking questions.
- define chemical thermodynamics;
- define system;
- give examples of system;
- explain open, closed and isolated systems;
- classify system as open, closed and isolated
- define state function and path function;
- distinguish between intensive and extensive properties; and
- define spontaneous and non-spontaneous process
- explain internal energy in relation to the concepts of thermodynamics
- explain heat in relation to the concepts of thermodynamics;
- explain work in relation to the concepts of thermodynamics;
- state the first law of thermodynamics;
- explain the first law of thermodynamic
- calculate the change in the internal energy of a system based on a given information
- define enthalpy change, PH
- derive an expression for the enthalpy change of an

- define a crystal;
- name the four types of crystalline solids and give examples;
- mention the types of attractive forces that exist within each type of crystalli
- describe the properties of each type of crystalline solids;
- build a model of sodium chloride crystal structure

UNIT 4

- explain what is meant by reaction rate and perform activities that determine it;
- demonstrate an understanding of the dependence of reaction rate on the nature of reactants, the surface area of solid reactants, the concentration of the reactants, temperature of a system and the presence and nature of catalysts
- determine reaction rates, using experimental data and calculations
- describe how reaction rate theories (collision theory and transition-state theory) explain changes in reaction rates
- determine the rate laws and order of reactions from data on initial concentrations and reaction rates
- understand that most reactions occur as a series of elementary steps in reaction mechanisms
- appreciate the importance of chemical kinetics in industry and in living organisms
- demonstrate scientific enquiry skills, including observing, predicting, comparing and contrasting, communicating, asking questions, drawing conclusions, applying concepts, relating cause and effect, making generalizations and problem solving
- define chemical kinetics;
- define reaction rate;
- express reaction rate in terms of the disappearance of the reactants and the appearance of the products
- perform an activity to measure rate of reaction;
- calculate a reaction rate from given data;
- list the factors that affect reaction rate
- explain how the nature of reactants, the surface area of solid reactants, temperature and concentration or pressure affect rate of reaction, by giving examples
- explain activation energy;
- define catalyst, positive catalyst and negative

ideal gas, based on the first law of thermodynamics

- calculate enthalpy change for ideal gases, from a given information
- define standard state;
- define standard molar enthalpy of combustion, C
- describe how heats of combustion can be used to estimate the energy available from foods
- define standard molar enthalpy of formation, f□□H□□;
- define standard molar enthalpy of neutralization, DH° neut;
- carry out an activity to measure standard molar enthalpy of neutralization;
- state Hess's law
- apply Hess's law to solve problems on enthalpy changes of chemical reactions;
- explain bond energy;
- calculate the bond energies of substances in a given chemical reaction; and reactants and products.
- explain entropy and entropy change;
- calculate entropy change, from the given standard entropies of substances;
- state the second law of thermodynamics;
- explain the second law of thermodynamics;
- calculate the entropy changes from the given enthalpy changes of the system and absolute temperature
- explain free energy and free-energy change;
- calculate the standard free-energy change, DG°, from given standard free energies of reactants and products;
- describe the relationship between DG°, DH° and S° of a reaction;
- determine the spontaneity of a given reaction.

UNIT 4

- understand the fundamental concepts related to oxidation-reduction reactions
- know the application of redox reactions in the production of new substances and electrical energy;
- demonstrate an understanding of fundamental concepts related to the interconversion of chemical and electrical energy
- understand the difference between metallic conduction and electrolytic conduction;
- identify and describe the function of the components of Electrolytic and Galvanic cells;
- understand the difference between electrolytic and Galvanic cells;
- know how to solve problems based on Faraday's first

catalyst; • distinguish between homogeneous and heterogeneous catalysis; • distinguish between biological and non-biological catalysts; • draw an energy diagram that represents activation energy and shows the effect of catalysts • distinguish between homogeneous and heterogeneous reactions; • perform an activity to show the effect of the nature of reactants, surface area, concentration, temperature and catalyst on reaction rate • state collision theory; • define activation energy; • describe how collision theory can be used to explain changes in reaction rate; • state the transition-state theory; • define activated complex (transition state); • describe how transition-state theory explains changes in reaction rate; and sketch and label the energy profiles of reactions that are exothermic and endothermic • define rate law, order of reaction and rate constant; • determine reaction order; • calculate rate constants from given experimental data; • describe the role of the rate constant in the theoretical determination of a reaction rate; • explain the zero order, first order and second-order reactions, using concentration versus- time curves • calculate that concentration and time the reaction mixture for different order reactions and plot their graphs; define half life • define half-life • calculate the half lives of zero-order, first-order and second-order reactions from experimental data. • explain reaction mechanism; • explain the molecularity of a reaction; • explain what is meant by rate determining step; • give specific examples to illustrate rate determining step; • explain the relationship between the reaction path way and the rate law; • use rate equation to suggest possible reaction mechanism for a reaction.	and second laws measure, through experimentation, the mass of the metal deposited by electroplating(example copper to copper (II) sulphate), and apply Faraday's Law to relate the mass of the metal deposited to the amount of charge passed • predict spontaneity of redox reactions and overall cell potentials by studying a table of half-cell reduction potentials • determine the emf of an electrochemical cell, experimentally or from given data; • explain the application of electrochemistry in our daily lives and in industry • explain corrosion as an electrochemical process, and describe corrosion-inhibiting techniques (e.g. painting, galvanizing, cathodic protection) • describe examples of common Galvanic cells and evaluate their environmental and social impact; • describe scientific enquiry skills: observing, classifying, comparing and contrasting, communicating, asking questions, measuring, relating cause and effect and problem solving. • define a redox reaction; • define oxidation, in terms of electron transfer and change in oxidation number; • define reduction, in terms of electron transfer and change in oxidation number; • describe the oxidizing and reducing agents; • identify the species that are oxidized and reduced in a given redox reaction and determine the oxidizing and reducing agents; • balance a given redox reaction, using the change in oxidation • balance a given redox reaction, using the ion • recall the concepts metallic conductivity, electrolytic conductivity and electrolysis of molten electrolytes • draw and label diagrams of electrolytic cell ; • define preferential discharge; • explain factors that affect preferential discharge • describe the effects of nature of ions on the electrolysis of aqueous solutions of dilute H2SO4 and NaOH • describe the effect of the concentrations of ions on the electrolysis of dilute and concentrated solutions of NaCl; • describe the effects of types of electrodes on the electrolysis of CuSO4 solution, using Ni and Cu electrodes • write the electrode half-reactions and overall reactions for the electrolysis of dilute H2SO4, dilute

UNIT 5 • understand how equilibrium is established; • explain characteristics of dynamic equilibrium • state the law of mass action, and write an expression for equilibrium constants, Kc and Kp, from a given chemical reaction • apply the law of mass action to calculate Kc,and Kp, the concentration and pressure of substances in equilibrium • und erstand how the reaction quotient is used to indicate the position ofequilibrium • state Le Chateliers' principle and use it to predict and explain the effects of changes in temperature, pressure, concentration and presence of catalyst on a reaction • perform an activity to demonstrate the effects of changes in concentration on the position of equilibrium and to determine Kc and Kp values • explain how equilibrium principles are applied to optimize the production of industrial chemicals (e.g. the production of ammonia and sulphuric acid); • demonstrate scientific enquiry skills, observing, predicting, comparing and contrasting, communicating, asking questions and making generalizations • explain reversible and irreversible reactions; • define dynamic chemical equilibrium; • state the necessary conditions for the attainment of equilibrium; • describe the microscopic events that occur when a chemical system is in equilibrium • describe characteristics of chemical equilibrium; • state the law of mass action; • define equilibrium constant • write the equilibrium constant expression for chemical reactions that involve concentration and partial pressure • calculate values for equilibrium constants involving concentration and partial pressure • state the relationship of Keq to relative amounts of product and reactants in a given reaction • show the relationship between Kc and Kp; • distinguish between homogeneous and heterogeneous reactions; • define reaction quotient • use the equilibrium quotient to predict the direction of a reaction and the position of equilibrium	NaOH, dilute NaCl, concentrated NaCl and CuSO4 solutions • distinguish between molten electrolytes and aqueous solutions of electrolytes • state Faraday's first law of electrolysis; • write the mathematical expressions for the Faraday's first law of electrolysis; • do calculations related to Faraday's first law of electrolysis; • state Faraday's second law of electrolysis; • write the mathematical expressions for Faraday's second law of electrolysis; • do calculations related to Faraday's second law of electrolysis. • mention the industrial applications of electrochemistry; • explain electroplating and electrorefining • demonstrate copper refining; and • explain how electrolysis is used in the production of some metals, nonmetals and compounds • define Voltaic cell and salt bridge; • draw and label Zn-Cu Voltaic cell; • define electrode potential and cell potential; • construct Zn-Cu Voltaic cell; • measure the cell potential of Zn-Cu cell using voltmeter; • explain how standard electrode potential is measured; • describe the reactivity of metal from its position in the activity series or electromotive serie • calculate cell potential; • decide whether a given redox reaction is spontaneous or not; • explain the effect of concentration on cell potential; • mention the different types of Voltaic cells; • give examples of each type of Galvanic cell; • describe how a hydrogen-oxygen fuel cell operates • distinguish between primary and secondary cells • identify the cathode, anode and electrolyte of a given Galvanic cell; • compare and contrast electrolytic and Galvanic cells; • explain metallic corrosion in terms of redox reactions; • explain the negative effects of corrosion; • explain the different methods of the prevention of corrosion **UNIT 5** • describe the occurrence and abundance of the elements in nature; • explain how carbon, nitrogen and phosphorus cycles

• calculate equilibrium concentrations, given initial concentrations • determine whether the reactants or the products are favoured in a chemical reaction, given the equilibrium constants • list factors that affect chemical equilibrium; • state Le-Chatelier's principle • use Le-Chatelier's principle to explain the effect of changes in temperature, pressure/volume, concentration and presence of a catalyst on a reaction • describe the effects of changes in concentration, pressure/volume and temperature on Keq; • perform an activity to demonstrate the effects of changes in concentration and temperature on the position of equilibrium; • perform an activity to determine Kc for esterification of organic acids; • define optimum condition; • explain how Le-Chatelier's principle is applied to the Haber process for manufacturing ammonia and to the contact process for manufacturing sulphuric acid • explain the interplay between kinetic and potential energy that underlies the properties of the three states of matter and their phase changes; • explain the process involved, both within a phase and through a phase change, when heat is added or removed from a pure substance • explain the meaning of vapour pressure and explain how phase changes are dynamic equilibrium processes • explain the relationship between vapour pressure and boiling point • describe how a phase diagram shows a phase of a substance at different conditions of pressure and temperature • use a phase diagram to determine melting point, boiling point, critical temperature, critical pressure and triple point of a substance **UNIT 6** • write the structural formula and IUPAC names of given carboxylic acids and esters • describe some physical and chemical properties of carboxylic acids and esters • predict and correctly name the products of organic reactions, including substitution, addition, elimination, esterification, hydrolysis and oxidation reactions;	in nature; • understand metallurgical processes; • understand the occurrence, extraction, chemical properties and uses of sodium, calcium, tin, lead, zinc and chromium; • describe the occurrence, extraction, chemical properties and main uses of silicon • explain the major steps in the industrial production of ammonia, nitric acid, sulphuric acid and diammonium monohydrogen phosphate • demonstrate scientific enquiry skills: classifying, communicating, asking questions, relating cause and effect and making generalizations • define the terms mineral and ore; • describe the forms of occurrences of metals; • discuss the distribution and relative amounts of the elements in the earth's crust; • define the term fixation; • discuss the carbon cycle, the nitrogen cycle and the phosphorus cycle • define metallurgy; • explain the major steps in metallurgical processes; • describe the manufacture of sodium by Down's cells • explain the chemical properties of sodium; • describe the uses of sodium; • describe the manufacture of calcium; • explain the chemical properties of calcium; • describe the uses of calcium; • describe the manufacture of tin; • explain the chemical properties of tin; • describe the uses of tin; • describe the manufacture of lead; • explain the chemical properties of lead; • describe the uses of lead; • describe the manufacture of zinc; • explain the chemical properties of zinc; • describe the uses of zinc; • describe the manufacture of chromium; • explain the chemical properties of chromium; • describe the uses of chromium; • describe the production of silicon; • explain the chemical properties of silicon; • describe the uses of silicon; • explain the steps in the Haber process in the industrial production of ammonia and describe the uses of ammonia • explain the steps in the Ostwald's process in the industrial production of nitric acid and describe the uses of nitric acid;

- carry out activities to prepare a carboxylic acid and an ester;
- list some important fatty acids;
- test for the carboxylic acid and ester functional groups;
- understand the structures, properties, uses of fats and oils;
- describe and explain reactions in soap making (saponification);
- describe and explain the cleaning action of soap and detergents
- understand the harmful aspects of detergents on the environment when improperly disposed;
- demonstrate scientific enquiry skills, including: observing, classifying, comparing and contrasting, asking questions, drawing conclusions, applying concepts and problem solving
- list common organic acids and name their sources;
- write the general formula of saturated monocarboxylic acids
- write the molecular formulas and names of the first six members of the saturated monocarboxylic acids
- give the structural formula for the first four members of the saturated monocarboxylic acids
- give the examples of mono, di and tricarboxylic acids;
- name some branched carboxylic acids;
- describe the physical properties of saturated monocarboxylic acids
- explain the general methods of preparation of saturated monocarboxylic acids;
- explain the industrial and laboratory preparation of acetic acid
- conduct an experiment to produce acetic acid in the laboratory
- name and write structural formulas of some fatty acids; and
- describe some uses of common carboxylic acids
- list common sources of esters;
- write the general structural formula of esters;
- write the molecular formulas and names of some simple esters;
- describe the physical properties of esters;
- explain the chemical properties of esters;
- explain the general methods of preparation of esters; and
- explain the steps in the Contact process in the industrial production of sulphuric acid and describe the uses of sulphuric acid;
- explain the steps in the industrial production of diammonium monohydrogen phosphate and describe its uses.

UNIT 6

- understand the processes of addition polymerization and condensation polymerization
- list a variety of synthetic polymers and natural polymers and explain their differences
- classify synthetic polymers as addition polymers or condensation polymers and identify their monomers
- describe monomers, properties and uses of plastics, rubbers, carbohydrates and proteins
- analyze the risks and benefits of the development of and application of synthetic polymers (example, plastics) and suggest possible methods of control
- demonstrate scientific enquiry including classifying, comparing and
- contrasting, communicating, asking questions, applying concepts and making generalizations
- define the terms monomer and polymer;
- classify polymers into synthetic and natural polymers; and
- give examples of synthetic and natural polymers
- explain polymerization;
- mention the two types of polymerization
- explain how addition polymerization takes place; and
- explain how condensation polymerization takes plac
- give examples of addition polymers;
- tell the monomers of each of the given addition polymers;
- explain common uses of addition polymers;
- give examples of condensation polymers;
- tell the monomers of each of the given condensation polymers;
- explain the uses of these condensation polymers: nylon, polyester and Bakelite;
- describe thermoplastics and thermosetting polymers; and
- give examples of thermoplastics and thermosetting polymer
- give examples of addition polymers;
- describe natural rubber;
- tell the monomer of natural rubber;
- explain vulcanization
- explain the use of natural rubber;

• describe some common uses of esters • define fats and oils ; • write the general structural formula for fats and oils; • present the structures of some common trigycerides; • describe physical properties of fats and oils; • explain the hardening of oils (process of converting oils to hard fats); • explain rancidity; • define soap and detergent; • explain saponification; • prepare soap; and explain the cleaning action of soaps	• give three examples of synthetic rubber; • explain the uses of synthetic rubbers; • compare and contrast synthetic and natural rubber; • define the term carbohydrate; • describe monosaccharide; • draw the structures of monosaccharides; • give examples of monosaccharides and disaccharides; • describe disaccharides; • draw the structures of disaccharides; • describe polysaccharides; • draw the structure of starch and cellulos • explain the difference between starch, glycogen and cellulose; • define the terms amino acid, peptide and protein; • describe the structure of amino acids; • explain how proteins are formed; list types of proteins.

Geography

Grade 9	Grade 10
Unit 1 • recognize the concept • express the meaning • compute field distance and areas of irregular shaped figures • define the term geography; • describe the development of geography as a discipline; • determine the scope of geography; • identify the branches of geography; and • Identify the characteristics that make the subject of geography a science. • explain the meaning of a map; • appreciate the historical development of maps; • state the basic uses of maps; • categorize maps based on scales and purposes; • distinguish the conventional signs and symbols used to represent different features on maps; • identify some of the marginal information given on maps; • convert linear scale to areal scale; calculate the scale of a map; • calculate the areas of regular and irregular shaped figures by referring to the scale of a map; • construct statistical diagrams using simple line graphs, bar graphs and pie charts based on the provided data. • categorize maps based on scales and purposes;	**UNIT 1** • Develop the skill of identifying direction; • Measure distances on a map; • Practice map enlargement and reduction; • Acquire basic skills of locating places and objects on maps using different methods; • Understand the different ways of representing relief on maps. • Acquire the skill of finding direction on a map; • Show direction of a given place on a map by means of compass direction and bearings; • Explain the use of magnetic compass; • Practice, how to find direction and bearings of points on maps. • Define what the geographic grid system means; • Demonstrate the position of a given place by means of geographic grid system; • Define what the national grid system means; • Show the position of places on maps by using national grid reference (four and six digit grid reference); • Demonstrate the national grid origin of Ethiopia;

• distinguish the conventional signs and symbols used to represent different features on maps; **UNIT 2** • analyze the internal and external forces that change the surface of the earth and relate them to the resulting landforms; • appreciate the origin, composition and the layers of the earth's atmosphere; • analyze the association between elements and controls of climate and interpret climate data; • realize the concept of region and distinguish different temperature zones of the earth and describe Ethiopia as a tropical mountainous country; • assess the concept, components, interdependence and, the factors that affect the distribution and features of ecosystems; • list the landforms formed by each internal force; • describe the process of each internal force; • relate some major landforms with their respective internal forces; • explain the effects of earthquakes on infrastructure; like buildings, dams, roads; • review external forces; • state the meaning of weathering; • distinguish the different types of weathering; • identify land features resulting from chemical weathering; stalactite, stalagmite, pillar etc; • explain the types and characteristics of agents of erosion; • relate types of erosions; • state the effects of erosion on human activities; with various landscapes; • explain the process of deposition; • recognize erosion-deposited soils and landforms. • explain the meaning of atmosphere; • discuss the composition and layers of the earth's atmosphere; • explain weather and climate; • express the concept of temperature; • appraise the variation of temperature; • demonstrate how to measure and record temperature data; • compute normal temperature lapse rate; • interpret temperature data; • explain the formation of rain; • discuss the types of rainfall; • relate the various roof slopes of houses in various climatic regions to the respective types of rainfall; • explain what cloud is; • describe types of clouds; • practice measuring and recording rainfall data;	• Enlarge and reduce maps using a square or pantograph method; • Compute the scale of enlarged or reduced map. • develop the skill to enlarge and reduce a map using a square method and pantograph; • compute the scale of an enlarged or reduced map; • appreciate the need for map enlargement and reduction in certain circumstances. • describe methods of showing relief on maps; • define the term contour lines; • discuss the properties of contour lines; • identify the different ways of showing specific height on a contour map; • compute the altitude of points between contour lines; • explain the term slope; • demonstrate types of slope; • compute gradients of slope; • describe the term gradient of slope; • express gradient in different ways; • calculate field distance. **UNIT 2** • understand the origin of the earth and its tectonic movements. • describe the movement, composition of the earth and components of its physical environment. • discuss climate classification, change and climate of Ethiopia. • Explain factors that affect the diversity of Fauna and Flora and soil in the ecosystem. • discuss the concept of universe • identify the position of the earth in the solar system • explain the origin of the earth • demonstrate the structure of the earth • describe the geological time scale and major geological events • realize the major geological events of Ethiopia • describe the concept of continental drift theory. • describe the characteristics of each type of rocks. • demonstrate major rock distribution in Ethiopia • state causes and impacts of soil degradation in Ethiopia.

• differentiate types of winds (local, monsoon and planetary winds, including cyclones and anticyclones); • relate direction and deflection of winds to the earth's rotation; • interpret wind speed and direction from wind gradient map; • explain how conditions of wind affect structures of buildings and crop production; • Identify types of atmospheric pressure; • relate atmospheric pressure with temperature and altitude; • demonstrate the pressure belts of the world: • develop the skills of measuring and recording atmospheric pressure; • analyze the position of the sun at various latitudes at noon time of Dec. 22/ June 21; • examine the impact of latitude on temperature; • justify the effect of altitude on the characteristics of temperature, rainfall and air pressure; • compare and contrast the condition of rainfall and temperature between places of coastal and interior areas; • express the meaning and types of ocean current; • identify the impacts of ocean currents; • recognize the effects of ocean currents on temperature and rainfall on land surfaces; • discuss the types and location of pressure belts of the world; • state seasonal movements of pressure belts in relation to the apparent movement of the sun; • relate movements of planetary winds with pressure belts; • Predict the impact of cloud cover on temperature. • analyze the concept of region and regional study; • demonstrate temperature zones of the world; • discuss the major characteristics of a tropical zone; • state the general characteristics of the equatorial rainforest and hot deserts; • distinguish the major sub regions of the tropical zone; • explain the major relief features of Ethiopia; • assess the major characteristics of the temperate zone and sub-regions; • describe the general characteristics of the Mediterranean region; • explain the general characteristics of a coniferous region; • recognize the major characteristics of the frigid zone; and • differentiate the general characteristics of tundra and the polar ice cap • define the term ecosystem; • identify the components of ecosystem; and • demonstrate interdependence in the ecosystem. • identify what developments of transport and	• Realize the criteria used for classifying climate; • Compare the climate classifications of the Greeks' and that of Koppen; • Express causes of climate change; • Explain major consequences of climate change • describe the spatio-temporal variation of temperature in Ethiopia; • compare rainfall distribution of Ethiopia by place and time; • discuss factors why Ethiopia experiences climate different from other tropical countries; • differentiate climate zones of Ethiopia; • explain the reasons that drought may not necessarily followed by famine; • identify drought prone areas of Ethiopia; • state drought coping mechanism in agriculture. • review the concept of an ecosystem; • discuss how climate affects the distribution of an ecosystem; • realize the effect of latitude on the variation of an ecosystem; • explain the role of altitude on the distribution of ecosystem; • relate factors that affect the diversity of fauna and flora in the ecosystem; • identify factors that affect soil in ecosystems. **UNIT 3** • Understand the size and trend of world population growth; • State the components of population change and compare the characteristics of population structure between developed and developing countries; • Show factors affecting spatial distribution of population and compute population densities; • Recognize and appreciate the process and development of urbanization; • Explain the general characteristics of the population of Ethiopia. • Compare population size of the world on continental bases; • Identify three leading populous countries in each continent; • Describe population growth trends of the world to show doubling time; • Compare the population trend between Africa

communication technology has brought changes in location of economic activities. discuss how development of transport and communication technology has brought changes in location of economic activities.

UNIT 3

- analyze the concept of human population and the sources of population data;
- indicate the densely, moderately and sparsely populated regions of the world;
- distinguish settlement patterns of the world population;
- discuss the major economic activities of the world; and
- recognize the importance of natural resources.
- define the concept of human population;
- discuss facts about human population;
- distinguish sources of population data;
- identify the densely and sparsely populated areas of the world; and
- discuss the settlement patterns of world population.
- list the five types of economic activities;
- explain the major characteristics of economic activities;
- examine how economic activities modify and transform resources;
- describe concept and meaning of land use;
- identify land use system in Ethiopia;
- differentiate driving forces that change land use systems;
- differentiate rural land use from that of urban land use.
- list the five types of economic activities;
- define the concept of natural resources;
- classify natural resources into renewable and non-renewable;
- state the direct and indirect uses of natural vegetation;
- identify Ethiopia's common woods used for construction purposes;
- select Ethiopia's woods potentially significant for furniture and other purposes;
- recognize the economic significance of wild animals;
- show appreciation of the varied uses of minerals, and
- express the importance of soil.

UNIT 4

- realize the prevalence and impacts of HIV/AIDS;
- accept and participate in the implementation of environmental policies in Ethiopia; and
- realize the economic policy of Ethiopia.
- analyze the global prevalence of HIV/AIDS;
- explain the prevalence of HIV/AIDS in Ethiopia;
- reflect upon the impact of HIV/AIDS in Ethiopia; and decide to join the school anti-HIV/AIDS club to alleviate the prevalence of HIV/AIDS in Ethiopia.

and Europe.

- Describe components of population change;
- Compute natural increase rate of the population
- Interpret population pyramids of developed and developing countries.
- Discuss the factors affecting spatial distribution of world population;
- Compute crude and agricultural population density;
- Realize causes and types of human migration;
- Recognize what urbanization is;
- Compare level of urbanization at continental level;
- State factors affecting urbanization process.
- Compare the present population size of Ethiopia with the past;
- Describe the spatial distribution of Ethiopia's population;
- Show the demographic characteristics of Ethiopia's population;
- Analyze the population structure of Ethiopia;
- Realize population policy of Ethiopia.

UNIT 4

- Recognize types of economic systems;
- State the concept of sustainable development and its indicators;
- Recognize the role and contribution of economic organization and realize the concept of globalization.
- Discuss the concept of different economic systems;
- Compare and contrast the types of economic systems.
- Explain the concept of sustainable economic development;
- Justify the indicators of economic development.
- identify world economic organizations;
- realize the contribution of world economic organizations to development;
- discuss the concept of globalization;
- compare and contrast the advantages and disadvantages of globalization.

Grade 12

UNIT 1

- acquire basic research skills to enable you conduct action research;

- Adhere to implementation of Ethiopia's environmental policy.
- realize the contribution of the economic policy of Ethiopia for development.

Grade 11

UNIT 1

- understand the meaning and basic concept of geography;
- realize the scope of geography and its relationship with other disciplines;
- discuss different approaches of geographic studies;
- realize major schools of thought in geography
- state the meaning of geography.
- determine the scope of geography.
- justify the merit and demerit of approaches used to study physical and human environments
- compare and contrast the concept of determinism with possibilism
- show appreciation for the significance of quantitative studies;
- verify the importance of applied geography in solving social and environmental problems
- relate elements of geographical study with other fields of studies;
- explain the role of geography in connecting various fields of study.

UNIT 2

- review the definition and properties of contour lines;
- realize how contour lines are used to represent relief features on maps and types of contours;
- acquire the skills of drawing contour lines, cross-sections and determine intervisibility;
- assess the differences among watershed, river catchment area, drainage patterns and river capture using topographic (contour) maps;
- discriminate settlement and communication features from contour maps
- draw contour lines from spot heights, using interpolation;
- construct relief cross-sections to visualize features of the landscape;
- determine the intervisibility of land features by section drawing or contour maps;
- differentiate different landforms on contour maps;
- identify types of contour lines.
- determine catchment areas from watershed on contour map;
- distinguish different drainage patterns;
- demonstrate river capture; and
- demonstrate stages of river valley development using
- understand the significance of research and its nature in geography; and
- know different approaches used in geographic research.
- explain the concept of research.
- show appreciation to the significance of research in tackling social problems.
- use different geographic research approaches in action research.
- reflect the distinct nature of geographic research from other disciplines.
- use basic elements of research in your action research.
- conduct action research on selected problems.

UNIT 2

- Recognize meanings, uses, conventional signs and symbols and distribution of topographic maps;
- Distinguish the properties of globe and map;
- Analyze the meaning, significance, properties and classification of map projections;
- Acquire basic skills to draw sketch maps.
- Define topographic maps;
- Identify the uses of topographic maps;
- Interpret conventional signs and symbols on topographic maps;
- Realize the difference between qualitative and quantitative distribution maps;
- Translate different data into distribution maps using different diagrammatic methods
- compare and contrast the properties of globes and maps.
- define map projection;
- discuss the significance of map projection;
- identify the properties of map projection; and
- demonstrate cylindrical, conical and zenithal map projections.
- define what a sketch map is;
- explain the purpose of drawing sketch maps;
- discuss the guidelines for making good sketch maps; and
- draw a sketch map of a given area.

UNIT 3

- describe the location and size of countries in the Horn of Africa;
- recognize the geological history, structure and relief of the Horn of Africa;
- discuss the significance and characteristics of

contour lines.
- distinguish various patterns of settlement on maps;
- interpret the shape of settlements;
- explain the types of settlements;
- estimate factors influencing the sitting of settlement
- reflect the function of settlements;
- identify various airfields on maps.
- discuss what geographical information system means;
- explain turning points in the development of GIS;
- state the use of GIS;
- show appreciation for the uses of GIS.

UNIT 3

- understand the locational and geological aspects of Africa;
- recognize the climatic characteristics of Africa;
- know and appreciate the characteristics of the drainage patterns and other water resources of Africa;
- appreciate the wildlife resources of Africa; and
- distinguish the soil resources of Africa.
- demonstrate the relative and absolute location of Africa using world map;
- compare the size of Africa with other continents;
- discuss the impacts of the coastal and continental shape of Africa on its development;
- describe the regional division of Africa;
- show the geographical location of each region;
- relate the sub regions in terms of size, access to the sea and major relief structure
- analyze the socio-economic and geo-political similarities of each region.
- reconstruct the geological history of Africa;
- identify major relief structures of Africa on a map;
- appreciate the unique relief features of Africa; and
- compare the relief of Africa with other continents.
- review the elements of weather and climate;
- identify the major climatic controls of Africa;
- describe the seasonal temperature conditions of Africa;
- explain the seasonal distribution of rainfall in Africa;
- locate the climatic regions of Africa;
- compare and contrast the different climatic regions of Africa;
- relate climatic data with the different climatic regions of Africa;
- explain the causes and consequences of drought in Africa; and
- locate drought-prone areas of Africa.
- demonstrate the major rivers and drainage systems of Africa;
- discuss the characteristics of the major African rivers;
- identify the location of lakes and swamps in Africa;

the drainage systems of Ethiopia and the Horn;
- appreciate water-resource conservation and management policy;
- identify the factors influencing the spatial and temporal distribution of elements of climate in Ethiopia;
- realize the different types of natural vegetation and wild animals of Ethiopia;
- describe soil types, problems and conservation in Ethiopia.
- indicate the location of the Horn of Africa;
- compare the size of countries of the Horn.
- demonstrate the relative and absolute location as well as the shape of Ethiopia.
- explain geological structure and major events of the Horn of Africa;
- describe major landforms of Ethiopia and the Horn;
- discuss the general characteristics of Ethiopian rivers and drainage patterns;
- classify the Ethiopian lakes as highland and rift valley;
- show appreciation for the significance of rivers and lakes of Ethiopia;
- show interest for the implementation of water-resource conservation and management policy.
- discuss the factors that influence the spatial distribution of the climatic elements of Ethiopia and the Horn;
- describe the spatial and temporal variation of temperature in Ethiopia and the Horn;
- explain the spatial and temporal variation of rainfall in Ethiopia and the Horn;
- compare the rainfall regions in Ethiopia.
- relate types of natural vegetation to climatic regions;
- identify the wild animals of Ethiopia;
- discuss the effects of human intervention on forest lands;
- show interest to participate in the conservation of natural vegetation and wild animals.
- relate formation of soils of Ethiopia with geological events of the past;
- distinguish major soil types in Ethiopia; and
- realize soils problems and its conservation in Ethiopia

UNIT 4

- realize the economic significance of African rivers and lakes; and
- analyze the hydro-politics of the Nile River.
- relate natural vegetation and wild animals with climatic regions;
- appreciate the types and economic uses of wild animals in Africa;
- show interest in implementing natural-vegetation and wild-animals conservation measures.
- state the major soils of Africa with their specific characteristics;
- relate the soils of Africa with their respective climatic regions; and
- analyze soil problems and measures of conservation in Africa.

UNIT 4

- describe the size, growth and distribution of population of Africa;
- discuss determinants and characteristics of African population;
- analyse the extent of migration and level of migration in Africa;
- explain the concept of economic growth and development and describe the characteristics of African economy;
- asses the present features of African socio-economic development;
- distinguish indicators of development and analyse the challenges and prospects of African economic development;
- recognize major resources its exploitation and development; and
- appraise resource utilization and conflict management.
- explain population size and growth in Africa;
- describe population distribution of Africa using map; and
- discuss the regional variation of population of Africa.
- describe the concept of economic growth and development;
- analyze the economic growth and development trend of Africa;
- realize the characteristics of African economy;
- explain how and why most countries of Africa may be judged as less developed;
- discuss the present features of African socio-economic development;
- organize data of socio-economic growth and development and forecast the socio-economic challenges and prospects of Africa; and
- predict the socio-economic challenges and prospects of Africa based on the organized data.
- discuss population theories, trends, growth, structure, spatial distribution and factors affecting population distribution in Ethiopia;
- explain settlement patterns, determinants of population changes, impacts of rapid population growth and urbanization in Ethiopia.
- analyze the population theories of Malthusian and anti-Malthusian
- explain the trends of population growth and structure in Ethiopia.
- discuss the spatial distribution of population in Ethiopia.
- state factors affecting population distribution in Ethiopia.
- realize settlement patterns of Ethiopian population.
- compare fertility and mortality from a given data.
- analyze the impact of rapid population growth on Ethiopia's socio-economic and environmental conditions.
- adhere to the realization of population policy of Ethiopia
- explain the concept of urbanization; and
- discuss the rate of urbanization and its regional variation in Ethiopia
- compare rate of urbanization.

UNIT 5

- realize economic growth, development trend, major features and present socio-economic development and its indicators
- analyze the challenges and prospects of socio-economic development for Ethiopia
- appreciate the economic relationships with its neighboring countries and other continents
- recognize plan for accelerated and sustainable development to end poverty (PASDEP)
- discuss trends of economic growth and development in Ethiopia
- characterize the major features of the Ethiopian economy; and
- describe links between different economic sectors of Ethiopia.
- reflect links between different economic sectors of Ethiopia;
- generalize the present features of Ethiopian socio-economic development; and
- analyze indicators of development in the

• relate major resources of Africa to its exploitation and development of Africa; • state the actual mineral extraction methods of Africa; • relate the paradox between the potential and actual resources exploitation in Africa; and • Defend for the advantages of peaceful mechanisms of conflict management around resource utilization in Africa against aggressive mechanisms.	Ethiopian context • state the challenges to and prospects for Ethiopia's socio-economic development. • appreciate Ethiopia's economic relations with other countries. be interested in PASDEP.

Biology

Grade 9	Grade 10
Unit 1	**Unit 1**
• Name at least one renowned Ethiopian biologist. • Explain the contributions of these Ethiopian biologists • Explain how scientific institutions contribute to scientific research • Name some Ethiopian institutions involved in biological research. • Explain the activities and contributions of some of these Ethiopian	• Define biotechnology • Discuss the significance of biotechnology • Explain some of the traditional uses of biotechnology, for example, in preparing bread, yoghurt, cheese and beer. • Identify new applications of in agriculture, biotechnology food production, medicine and energy production.
Unit 2	**Unit 2**
• Name different types of microscopes • Distinguish between the magnification and resolution of a microscope State the functions of different types of microscopes. • Compare the different resolutions and dimensions of light and electron microscopes. • Explain and demonstrate basic techniques using a light microscope. • Explain the purpose of staining cells. • Use the microscope to study cells • Compare the way materials are prepared for the electron microscope and the light microscope. • State the cell theory. • List the structures of cells and describe their function. • Draw and label diagrams and compare typical plant and animal cells. • Describe the types, shapes and sizes of a variety of cells using diagrams. • Describe the permeability of the cell membrane. • Describe the process of diffusion and its importance in living organisms. • Demonstrate diffusion experimentally. • Explain the process of osmosis and its importance in living organisms • Demonstrate osmosis experimentally. • Show that plant cells become flaccid when they lose water	• Define heredity and compare mitosis and meiosis • Define chromosome, DNA and genes. • Describe the structure of chromosomes and list the components of DNA. • Describe the work of Gregor Mendel on garden peas and relate hisexperiments to the principle of inheritance. • Demonstrate the principle of inheritance using beads. • Describe the methods, importance and examples of breeding farm animals and crops. • Describe methods of breeding farm animals and crops. • Explain the importance of selective breeding for society. • Explain the difference between selective breeding and cross-breeding. • Give examples of selective breeding from your own experience
	Unit 3
	• Name the parts of the nervous system • Explain the structures and functions of the human nervous system. • List the three types of neurons, indicate their

and turgid when they absorb water by osmosis.
- Explain plasmolysis and turgor pressure.
- Explain passive and active transport across cell membranes.
- Discuss the advantages and disadvantages of diffusion, osmosis and active transport for moving substances into and out of cells.

Unit 3

- List the major nutrients needed by the human body and their sources List the main sources of some of the vitamins and minerals needed by the human body.
- Carry out laboratory tests to identify different nutrient groups in a food sample.
- Explain the concept of a balanced diet and what it involves.
- Define nutrition and malnutrition and describe the effects of malnutrition
- Understand the concept of height/weight tables and how they can be used to help maintain a healthy body mass.
- Analyse a local diet and if necessary suggest ways in which it might be improved to become more balanced
- Label a diagram of the human digestive system.
- Describe the functions of the structures of the human digestive system.
- Define enzymes and describe their role in the process of digestion.
- Describe the structure of the teeth and explain their importance.
- Describe the processes of digestion in the mouth, stomach and small intestine.
- Demonstrate that starch digestion begins in the mouth using saliva
- Explain how the products of digestion are absorbed and assimilated by the body.
- Discuss constipation, care with canned, bottled and packed foods and food hygiene as issues of digestive health
- Explain the importance of breathing in humans
- Describe the structure and functions of the human respiratory system.
- Examine the structure of a lung from an animal such as a cow or sheep
- Explain the mechanism of breathing using a lung model.
- Explain the process of gas exchange.
- Demonstrate the presence of CO2, water vapour and heat in exhaled air.
- List the factors which affect breathing and explain how they affect it.
- Explain the effects of cigarette smoking and inhaling gaya, suret and shisha on health and on the economy of the family.
- List the methods of maintaining the hygiene of breathing structures and explain their functions
- Describe an action potential and the passage of a nerve impulse along a neuron with examples.
- Describe a synapse and how an action potential crosses it.
- Describe neurotransmitters with examples.
- Explain how the brain is protected and compare the functions of the fore, mid and hind brain.
- Describe the reflex arc, mention the structures involved and compare **s**imple and conditioned reflexes
- Demonstrate at least two examples of reflex actions such as knee jerks and blinking.
- Define substance abuse, explain its effects, its status in Ethiopia and possible preventative measures.
- Give examples of drugs abused in the locality.
- Express willingness to conform to a drug-free lifestyle.
- Indicate the structures of the human eye, ear, skin, tongue and nose using diagrams or models, and describe their functions and methods of caring for them
- Show the structures of the eye using a sheep's or cow's eye
- Describe image formation and accommodation.
- Demonstrate the blind spot.
- List common eye defects in humans and explain their causes and the available corrective measures.
- Explain how balance is maintained by the inner ear.
- Identify the taste areas of the tongue.
- Conduct an experiment to prove that the actual taste of food is a mixture of taste and smell.
- Draw and label the smelling organ.
- Draw and label the structure of the skin.
- Define glands as structures that produce hormones or other secretions glands and distinguish between exocrine and endocrine glands
- Locate the position of the main endocrine glands and describe their functions.
- State the cause and treatment of goitre.
- State the cause and treatment of diabetes

- Describe the steps followed during artificial respiration and be able to demonstrate these steps.
- Explain cellular respiration and describe the formation of ATP and its importance to the body.
- Define and compare aerobic and anaerobic respiration, and explain their importance in cells.
- Explain how oxygen and nutrients are transported in the blood.
- Indicate the structures of the heart on a diagram/model.
- Explain the functions of the structures of the heart.
- Examine a mammalian heart using fresh or preserved specimens.
- Take your own pulse, counting the heartbeats using your fingers.
- List the three types of blood vessels.
- Explain the functions of the blood vessels.
- Name the components of the blood.
- Tell the functions of the components of the blood.
- List the four blood groups.
- Indicate the compatibility of the four blood groups
- Explain the causes and prevention of anaemia and hypertension

Unit 4

- Define micro-organisms and list the main types.
- Explain the useful and harmful effects of some micro-organisms.
- Explain how vaccines are made, how they work and their importance.
- Describe the methods used to control micro-organisms.
- Distinguish between disinfectants, antiseptics and antibiotics.
- Describe how to grow a bacterial culture and show simple staining methods of micro-organisms.
- Explain how vaccination works and evaluate the impact of vaccination on diseases in Ethiopia.
- Explain the role of parasites in causing disease. control of a tapeworm infection.
- List the causes of tuberculosis, AWD, cholera and typhoid, and describe the signs and symptoms of these common infectious diseases
- Explain how tuberculosis, AWD, cholera, typhoid and gastroenteritis are spread from one person to another and the methods of prevention and controlling them
- Define the term vectors.
- Explain the effects of the Anopheles mosquito and malaria on the health of human beings and its methods of transmission, prevention and control
- Describe the way in which behaviour and lifestyle choices affect the spread of STDs

mellitus.

- Describe the menstrual cycle and the associated changes.
- List the different birth control methods and explain how each one works. Health
- Describe female genital mutilation as a harmful traditional practice.
- Describe the symptoms and incubation period of HIV/AIDS.
- Explain how AIDS is currently treated.
- Demonstrate life skills that will help you prevent the spread of HIV/AIDS.
- Define homeostasis as maintenance of a constant internal environment and explain its significance.
- Define poikilotherms as organisms whose temperature is governed by the external temperature.
- Define homoiotherms (homeotherms) as organisms with constant body temperatures.
- Explain the physiological methods of temperature regulation in homoiotherms.
- Explain the behavioural methods of temperature regulation in homoiotherms and poikilotherms.
- Label the structures of the kidney.
- State the functions of the structures of the kidney.
- Explain how the kidney regulates water and ionic balance.
- Explain how the skin helps in water and salt balance
- Explain the role of the liver in regulation of the body.

Unit 4

- Label the internal structures of leaves.
- Explain the functions of the internal structures of leaves.
- Use the microscope to study the internal structures of leaves.
- Explain the importance of light, chlorophyll and carbon dioxide (CO_2)for photosynthesis
- Demonstrate the importance of light, chlorophyll and carbon dioxide (CO_2) for photosynthesis with simple experiments.
- Explain how plants convert carbon dioxide and water into carbohydrate by describing the light and dark reactions
- List the various food storage organs of plants

- State signs and symptoms, causative agents, methods of transmission, methods of limiting spread and possible treatment of the following infectious diseases: gonorrhoea, syphilis and chancroid
- State the risks of taking self-prescribed medicines
- Explain how both modern and traditional medicines should be used and handled, and discuss the advantages and disadvantages of both
- Describe the structures and functions of the lymphatic systems
- Identify the white blood cells as the cells that are primarily attacked by HIV and explain how HIV affects the immune system
- Show local, national and global distribution of HIV and AIDS. Explain the impacts of HIV and AIDS in Ethiopian society.
- Demonstrate methods of giving care and support to people living with HIV/AIDS (PLWHA) and ways of overcoming discrimination.
- Explain the importance of voluntary counselling and testing services (VCTs).
- Express willingness to participate in VCTs.
- Discuss the role of responsible sexual behaviour in preventing the spread of HIV/AIDS.
- Demonstrate the life skills such as assertiveness, decision making and problem solving to help prevent the spread of HIV/AIDS

Unit 5

- Explain the need for classification.
- Define species as a group of individuals able to breed successfully with one another.
- Describe the system of binomial nomenclature developed by Linnaeus.
- Explain how organisms are given scientific names.
- Write scientific names properly and give examples.
- Classify some common plants and animals, including humans, using their scientific names.
- Explain the five-kingdom classification system.
- Describe the kingdoms of the Monera, Protista and Fungi and give examples of organisms from each one.
- Describe the kingdom Plantae and explain its major divisions, giving examples.
- Classify angiospermes into monocots and dicots and explain the differences between them.
- Describe the kingdom Animalia and explain its major phyla, giving examples.
- Group animals into vertebrates and invertebrates and explain the differences between them.

with examples.

- Explain the importance of photosynthesis in agriculture.
- Explain that much photosynthesis takes place in water bodies and that people need to try and make use of this.
- Explain how photosynthesis helps to balance the concentrations of oxygen (O2) and carbon dioxide (CO2) in the atmosphere.
- Explain how deforestation may lead to a CO2 build-up in the atmosphere and finally to global warming.
- Explain water uptake by the roots. Explain the mechanism of water movement in plants.
- Describe transpiration, the factors affecting it and its implications for agriculture
- Demonstrate water transport in plants using simple experiments.
- Explain the mechanism of uptake of mineral salts through roots.
- Describe the movement of organic materials in the phloem.
- Demonstrate the processes of germination in dicots and monocots.
- List the plant hormones.
- State the functions of the plant hormones.
- Outline the mechanism of action of auxins.
- Explain the effect of removing apical dominance on plant growth.
- Demonstrate how sunlight influences plant growth.
- Name the different types of tropisms in plants. Explain the processes of tropism.

Unit 5

- Define natural resources.
- Define renewable and non-renewable resources.
- Classify natural resources as renewable and non-renewable.
- Define conservation as the protection and preservation of our natural environment
- Define biodiversity as the wealth of species in a given place.
- Explain the importance of conserving biodiversity.
- Summarise the general methods of conserving biodiversity.
- State some uses of vegetation.

• Classify the vertebrates into five classes and give examples of each. **Unit 6** • Define an ecosystem. Explain the abiotic (physical) components of an ecosystem. • Explain the biotic (biological) components of an ecosystem. • Define phototrophs, heterotrophs and chemotrophs. • Explain food chains using diagrams. • Explain food webs using diagrams. • Explain pyramids of biomass using diagrams. • Explain pyramids of energy using diagrams • Describe and illustrate the nitrogen cycle. • Describe and illustrate the carbon cycle. • Explain the need for adaptation. • Describe plant adaptations with examples. • Describe animal adaptations with example • Explain the importance of planting and growing trees. • Know how to plant and grow trees in your community	• Discuss the impact of human activity on natural vegetation. • Discuss how Ethiopian vegetation was affected in history. • List some of the endemic vegetation species in Ethiopia. • Discuss methods of conservation of vegetation. • Narrate how Ethiopian vegetation was affected in history. • State the uses of wildlife. • Describe the effects of humans on wildlife and its status in Ethiopia. • List at least five endemic wildlife species of Ethiopia. • Discuss methods of conservation of wildlife and the uses of National Parks of Ethiopia. • List at least five national parks of Ethiopia and mention some of the common species that exist in each of the National Park • Explain the causes of air pollution. • Explain the effects of air pollution. • Define global warming. • State the causes of global warming • Explain the methods of preventing global warming.

History

Grade 9	**Grade10**
Unit 1 • Explain the objective and methods of studying history; • Describe the process of human evolution; • Analyze state formation • Analyze the interrelations of the nations, nationalities, and peoples of Ethiopia. **Unit 2** • Point out the major achievements of most of the ancient civilizations of the world	**Unit 1** • Explain how Italians and Germans managed to form united national states, and the effect there of. • Analyze the causes, course and consequence of the civil war in the united states of America. • Describe the sequence of the industrial revolution, and its impact on Europe and the rest of the world. • Analyze the development of industrial capitalism in Europe, and as how it paved the way for colonial rivalries, conflict and scramble for Africa. **Unit-2** • Identify the main features of the long-distance trade in the Ethiopia region,

- Analyze the conditions leading to the rice and spread of Christianity;
- Give a brief account of the major progress attained through the Axsumite civilization;
- Differentiate the nature of Axsumite relations with the outside world and list the major factors for the fall of the Axsumite civilization;
- Analyze the historical conditions that led to the origin of Islam and the rise of Muslim Arab empire, and also identify the features of Muslim cilivization.

Unit 3

- Examine social, economic and political conditions in the Ethiopian region;
- Develop respect for the distinctive histories of the different peoples of Ethiopia and recognize their interrelated development;
- Develop the ability to identify and analyze cause and effect relations in historical study.

Unit 4

- Explain the major characteristics of European feudal society in medieval period;
- Outline the major features of the Byzantine empire;
- Indicate the relationship between Europe and the ottoman Turkish empire;
- Point out the major economic activities of early capitalism in Europe and European explorations and discoveries;
- Discus the major achievements of the renaissance;
- Describe the major characteristic of the reformation.

Unit 5

- Explain the basic cause of the conflicts between the Christian kingdom and the sultanate of Adal;
- Explain roles of the Portuguese and the ottoman Turks in the military conflicts In the horn of Africa;
- Identify the factors that helped the sultanate of Adal to take the upper hand
- Analyze the interaction among the peoples and states of the Ethiopian region connected with the long distance trade;
- Explain the attempts made at the restoration of the power of the central government after the political instability of the zemene mesafint
- Explain the different internal and external challenges to the central government during the reign of emperors Tewodros II and Yohannis IV;
- Explain the social economic and political factors behind the territorial expansions of Menilik II and the methods he followed to the incorporate the various peoples, nations and nationalities,
- Examine the sequences of the incorporation of the different Nations, Nationalities and peoples in the Ethiopia region;
- Explain the nature of colonial interest and aggression in Ethiopia in the last quarter of the 19th century.

Unit-3

- Analyse the causes, nature and consequences of the internal power struggle and political instability of the Ethiopian state.
- Examine the reasons behind foreign interventions, and
- Describe the main features of the emerging autocracy
- Explain the contemporary socio-economic developments and reforms,

Unit-4

- Explain the African resistance movements against colonial expansion and the struggle against colonial rule between the 1817s and 1939,
- Discuss the causes, course, and consequences of the first world war and describe its effects on colonial Africa,
- Analyze the Russian revolution,
- Explain the exemplary role of the Ethiopian struggle against colonialism in the 19th century
- Point out the emergence and development of nationalism in Africa prior to world war II.

Unit 5

- Explain the causes, the course and the consequences of the italo-Ethiopian war of 1935-36;
- Account for the failure for the league of nations to pass a just resolution;
- Discuss fascist Italy's occupation and the nature of fascist administration in Ethiopia;
- Elaborate on the sacrifices paid by the Ethiopian peoples in defense of their country;
- Describe the causes and course of the second world war, and how Italy's entry in to the war effected her colonial fat in east Africa, with particular emphases to Ethiopia;
- Discus the role of internal and external forces in the struggle for liberation;
- Explain the restoration of autocracy;

in the conflicts;
- Point out the long lasting consequences of the period of Adalite ascendancy;
- Locate the area of Oromo settlement before the sixteenth century population movement
- Describe the Oromo social, economic and political institutions and practices both before and after their expansion of the sixteenth century;
- Analyze the consequences of the Oromo population movement;
- Asses the significant part played by Oromo's in the historical developments in the Ethiopian region and the horn of Africa since in the sixteenth century.

Unit 6

- Explain the attempts to use the catholic religion to serve political ends;
- Explain factors for the isolation of the Christian kingdom of Ethiopia from Europe until the nineteenth century;
- List the advantages of the establishment of a permanent capital at gonder,
- Explain the political, economic, and social conditions during the zemene mesafint that led to economic and political stagnation of the kingdom;
- Describe the main political, economic, social and cultural organization and life in the states of the southern, eastern, western and central Ethiopia region;
- Outline the inter-connections and inter-relations among various peoples and states of the Ethiopian region, and those of the rest of the horn of Africa;
- Explain the external relations with the world outside the horn of Africa.

Unit-7

- Explain the major economic, cultural, social and political developments in the pre-colonial period;
- Realize the inter-connections and inter-dependence among Africans as a result of trade, populationmovements,wars,etc;
- Recognize African contributions to world civilation;
- Explain the intention of the British government to sustain it's influence in Ethiopia.

Unit 6

- Analyze the formation of the UNO; and its successes and failures;
- Explain the origin of the cold war and its character;
- Explain how the cold war was intensified;
- Identify the role of Ethiopia in the non-aligned movement.

Unit 7

- Compare the different form of anti-colonial struggle in the different part of Africa;
- Explain the origins, development and the role of PAN-African movement in and anti-struggle;
- Discus the strength, weakness of OAU,
- Outline the common challenges independent African states had to confront right after independence.

Unit-8

- Explain the socio-economic conditions under the regime of Haile silassie;
- Examine the impact foreign domination of Britain and USA on Ethiopia in the early decades of the post –war period;
- Identify the reasons for absence of progress under the monarchical rule;
- Explain the causes for the rise of different opposition groups and the response of the autocratic rule;
- Explain the origin and development of the Eritrean problem and how it became one of the major challenges to the regime;
- Examine the factors for the rise of a military dictatorship and internal and external factors that hastened its downfall;
- Explain the process of the transformation towards a federal democratic state of Ethiopia.

Grade 12

Unit 1

- Mention the various states and people found south and south west of Abay River
- Point out the different autonomous states that existed in Ethiopian region, until the end of19th century or before the formation of modern Ethiopian empire
- Explain the importance of long distance trade in the economy of the Ethiopian region
- Appreciate the importance of long distance trade in promoting interaction among different people of the Ethiopian region in various aspect of social life

Unit 2

- Point out the main economic, political and social consequence of the industrial revolution

- Realize the nature of slave trade.

Unit-8

- Discuss about the consolidation of capitalism in early modern Europe;
- Analyse the features of liberal democratic revolutions in England, the American colonies and France.
- Evaluate the gradual development of democracy.
- Analyse social, economic and political developments in the Napoleonic Empire.

Grade 11

Unit 1

- Tell the meaning of history
- Discuss the importance of studying history
- Identify the source of history
- Gain skills in the collection of historical data and use of sources of history

Unit 2

- Analyze the process in the development of early human beings as they progressed from food gathering to more advanced ways of life
- Explain the role of the Ethiopian Rift valley as the cradle of human being
- Describe the major sites where the Neolithic Revolution took place in Ethiopia and the rest of the world

Unit 3

- Explain the historical process of emergence of state
- Analyze the nature of early states and civilization
- Compare and contrast the different ancient civilizations including the Ethiopian region and the Horn of Africa

Unit 4

- Describe the origin and development of feudalism
- Analyze the effects of trade in the medieval society
- Discuss the cause and result of crusade
- Explain the features of early capitalism development
- Analyze the cause and course and consequence the civil war in USA
- Explain the main factors that contributed to the Germany and Italian unification
- Analyze the development of capitalism in Europe
- Explain the nature of African resistance to the imposition of European colonial rule in Africa

Unit 3

- Analyze the method and policy used in as well as the process of the building of the modern Ethiopian Empire
- Elaborate the external wars of aggression by Egyptian, the Mahdist Sudan, and the Italian colonialists against Ethiopia, during the 2nd half of 19th century
- Explain scarification made by patriotic Ethiopians in defense of the country from foreign challenges to its independence
- Explain the significance of the survival of Ethiopian independence in the era of scramble of Africa, both to Africans and black people all over the world
- Elaborate on some of the outstanding events which had a profound impact on the making of modern Ethiopia
- Indicate on a map of Ethiopia some of the major battle sites where the Ethiopian fought against foreign invaders
- Discuss the political crises that the ruling circles of Ethiopia faced in the first few decades of the 20th century
- Describe socio economic conditions in Ethiopia, in the early decades of the 20th century
- Explain the birth of the absolutist state under emperor Hiule Selassie in Ethiopia

Unit4

- Explain the main cause of the first world war
- Explain the courses of the war
- Identify and analyze the effects of the war
- Identify and analyze the effects of the war
- Identify and explain the fundamental causes of the Russian Revolution
- Describe the major events that took place in the course of the Russian Revolution
- Appreciate the values of equality and justice

Unit 5

- Analyze the causes of the 1935 Italian aggression against Ethiopia
- Explain why fascist Italy was successful in its invasion of Ethiopia
- Describe the course of the war
- Discuss Italian fascist occupation and administration of Ethiopia
- Explain the consequence of Italian rule
- Give an account of the Ethiopian patriotic resistance

Unit 5

- Identify the various peoples and languages of the Ethiopian region and the Horn of Africa
- Explain the pre-Aksumite civilization as part of ancient civilization and development in the Horn of Africa
- Analyze the continuity of historical developments in the region after the 12th century

Unit 6

- Analyze the historical conditions that led to the transition from the middle age to the modern age
- Examine the nature of the changes during the transformation period from medieval to modern period

Unit 7

- Explain the states in the Ethiopian region and the Horn of Africa between the second half of the thirteen century up to 1529
- Compare the peoples and states in the southern, eastern and centeral regions of Ethiopia
- Explain Ethiopia as a multi-cultural country and land of diversity

Unit 8

- Examine the cause of the war between the sultanate of Adal and the central High lands Christian kingdom
- Explain the involvement of the Portuguese and the ottoman Turks in the war between sultanate of Adal and the central High lands Christian kingdom
- Explain the cause and processes of the Oromo population movement and expansion of the sixteenth centuries and its consequences
- Analyze the traditional Oromo social and political organizations and practices

Unit 9

- Analyze the attempts to catholicize the Christian highland kingdom
- Discuss the origins as well as socio economic and political development of the Gondarine period
- Examine the socio-economic and
- Discuss the liberation of Ethipian in 1941
- Analyze the interplay of internal and external forces in the course of Italian aggression against Ethiopia and also the liberation of the latter
- Appreciate the sacrifices paid by the Ethiopian patriots to defend the country's independence

Unit 6

- Analyze historical development leading to the 2nd world war
- Identify the specific terms of the treaty of Versailles that caused Germany resentment
- Elaborate as how governments with expansionist & aggressive policies drove the whole world to another world war
- Enumerate the consequences of the war stand against unjust wars
- Demonstrate sense of patriotism for the maintenance of the peace of the world

Unit 7

- Discuss the emergence of the two antagonistic super- power ; i.e the USA and the USSR, in the world
- Explain the division of the world into capitalist and socialist camp
- Analyze the main feature of the cold war
- Give a brief account of the Chinese socialist revolution
- Discuss the independence of the India and Indonesia from colonial rule
- Explain the cause and consequence of the Vietnam war
- Discuss the origins of the Arab-Israel conflict
- Appreciate the efforts and the forces that have kept the world in relative peace, in spite of some major regional conflicts
- Realize the need to make sacrifices to protect national independence
- Realize the need to work for the interests of humankind
- Locate on map the areas where the above historical developments occurred

Unit 8

- discuss the restoration of the monarchy
- analyze the futures, and the strengthening of the Haile Silassie's autocratic state
- discuss socio-economic conditions under Haile Selassie absolute state
- describe the plots, rebellions, revolts and oppositions to Haile Selassie's autocratic state
- analyze Ethiopia's foreign relations
- discuss the popular Ethiopian revolution and its consequences
- Discuss the nature the socialist military dictatorship and the triumph of opposition forces
- Describe the transition to the Transitional government of Ethiopia

political developments in the Christian highland kingdom during the Zement Mesafint **Unit 10** • Trace the development of capitalism in the 16th and 17th centuries • Examine the main features of liberal democratic revolutions in England • Discuss the democratic ideas which motivated the English, American and French revolutions • Analyze the main aspects of the Industrial revolution **Unit 11** • Discuss the feature of African states and civilizations that had existence prior to the advent of European colonialism • Analyze the causes and results of the Trans-Atlantic slave trade	• Explain the struggle of the people of Ethiopia for equality, democracy, and economic development **Unit 9** • Identify the contribution of pan-Africanism to the national liberation struggle of Africa from colonialism • Discuss the national liberation movements and the struggle of Africans for independence • Identify the African states that were formed at libration from colonialism • Identify the successes and failures, as well as the major problems of the organization for Africa unity • Identify the major problems of independent Africa • Appreciate the African struggle for national independence • Draw a political map of Arica, showing the independent states of Africa • Appreciate the straggle of Africa for development, justice and democracy