Instructional Television versus Conventional Instruction: A Comparative Study of Achievement in Secondary School

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Measurement and Evaluation

By

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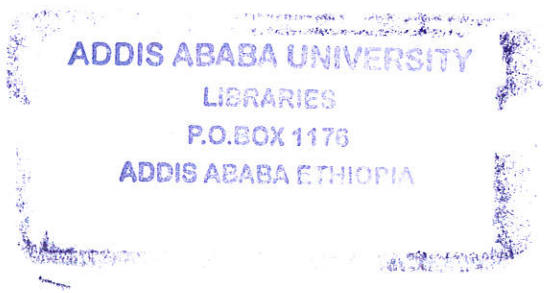

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

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Approval of Board of Examiners

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Abstract

The major purpose of this study is to investigate the contribution of Instructional Television (ITV) and students' ability level, gender and age to the variation in students' academic achievement. The participants were 1890 randomly selected Shinshicho Secondary School (n=1260) and Doyogena Secondary School (n=630) students of Kembata Tembaro Zone. Students from Shinshicho Secondary School were taught with Instructional Television (ITV) and those of Doyogena students were taught with Conventional Instruction. Documents of Ethiopian General Secondary Education Certificate Examination (EGSECE) results and teachers' achievement test results were used to obtain data relevant to the independent and dependent variables of the study. The analysis was carried out using ANOVA, F-test and t-test. Results indicated that there is significant difference in academic achievement between students in Instructional Television (ITV) group and Conventional Instruction group. The conventional group performed better in grade point average than satellite television group. With regard to ability levels, the two-way analysis of variance (ANOVA) indicated that there was significant difference in academic achievement among ability levels at alpha 0.05 levels. There were no statistically significant differences in grade point average of High and average achieving students between the satellite instructional television and conventional methods of instruction. The low achieving students from conventional instruction group performed better in academic achievement than the instructional television group student. However, the results revealed that there was no statistically significant difference in academic achievement among the age groups.

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Abbreviations

EGSECE- Ethiopian General Secondary Education Certificate Examination

EMA- Educational Mass Media

FDRE- Federal Democratic Republic of Ethiopia

GPA- Grade Point Average

ITV- Instructional Television

MoE- Ministry of Education

SITE- Satellite Instructional Television

SNNPR- Southern Nations Nationalities and Peoples Region

STI- Satellite Television Instruction

TGE- Transitional Government of Ethiopia

TI- Traditional Instruction

UNESCO- United Nations Economic Social and Cultural Organization

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Education makes people more receptive to change and innovation. It is an instrument used to produce skilled manpower, which is the driving force behind any development endeavor.

The development of human resources has been recognized as one of the major challenges facing developing countries in the process of achieving economic and social development. This problem can only be alleviated through improvement and expansion of education. Due to the critical role of education in development in almost every country, the state largely assumes the responsibility of providing education to its citizens. Our country, being one of the developing countries, is encountering many problems, basically of economic and technological in nature. Its educational problems are like-wise many. In this respect a survey of Ethiopian schools could promptly reveal the immense problems that the country is facing at the moment. To seek proper solutions for existing problems and to improve the achievement of expected results our educational system should be repeatedly evaluated and use research results.

Accordingly, the Government of Ethiopia has placed great importance on education and recognized it as an essential component for development needs of the society (TGE, 1994). However, education cannot play this role unless it is of good quality, and unless it is relevant to the development needs.

The purpose of education anywhere is to prepare the young generation for future life. It is to help them be knowledgeable and productive citizens (TGE, 1994). The achievement of this end seems to be given higher emphasis in the new Education and Training Policy.

At present, new initiatives are being conducted in view of improving the quality of secondary school education through using Satellite Television Instruction (STI). It is also expected to make educational opportunities of secondary school equal throughout the country. Students in rural areas of the country get the same quality education as their counterpart in urban centers (FDRE, 2004). The best teacher is equally available for every student; bridge the gap between the poor and the rich, the privileged and underprivileged, the rural and the urban (Behera, 1995:34).

Satellite television instruction utilization in education is a recent phenomenon in Ethiopian Secondary and Preparatory School systems. The conventional way of instruction used only teacher lecture, textbooks, chalk, etc, for conveying the message of facts and information to students.

Nowadays, with advanced modern technology at hand, we should not continue with the old methods of teaching. Hence, science needs to be used widely in the field of education as we are trying in other social affairs. As stated by UNESCO (1984) "education is of course, not an isolated subsystem, closed in exclusively on its internal components: it is influenced by many processes that bring change to societies and to knowledge." In this age of increasing mechanization more and cheaper mechanical aids must find their way into every school classroom. The value of satellite television instruction must be utilized in its broadest sense. Besides, utilization and expansion with the inevitable factors of urbanization, industrialization,

modernization and population explosion, the sense of development for satellite television instruction must be created and all teachers and students must profit from using the audiovisual aids that are being utilized today.

In the 1950s, the new medium of television was enthusiastically embraced by educators as a new instructional opportunity (Husen, 1995). This indicates that educational delivery methodologies are experiencing a constant state of change due to the great advances available in the day-to-day environment. However, the methods of presentation were not developed. Blakely (1979) described the condition as public television works in the United States, Europe, and Japan broadcast courses for schools and homes. These live broadcasts generally showed a teacher lecturing in front of a classroom, so the visual potential of the medium was rarely utilized to the full.

School broadcasting originally offered services for curriculum enrichment. The urgency of the needs created by the post Second World War expansion of education led everywhere to shift toward more direct teaching, a trend powerfully reinforced by television. A very important advance was made when television was first used to provide a complete substitute for normal schooling with support from print and group activities (Bass, 1977:1399).

In Italy, where a legislative raising of the school age outran the national capacity to provide school building and qualified teachers, the national broadcasting organization, Radio 'televisione italiana' (RAI), decided in 1958 to provide courses covering the whole curriculum of the junior secondary school. These programs were aimed at children assembled

in private homes or in public centers staffed by teachers unqualified for secondary work (UNESCO, 1967).

In the developing world, experiences have varied, but for the most part, school television activities have been somewhat limited in scope, except a major project in El Salvador in the late 1960s. Television was the primary source of instruction in the newly established secondary level technical schools. Although most large scale television efforts tended to diminish the role of the classroom teacher, in El Salvador teachers were given a full year of training in how to use the televised lesson effectively with the class (Husen, 1995). The success of television teaching was suggested and the study showed that Instructional Television (ITV) learning gains were significantly greater than the non-ITV gains in almost all cases (Mayo, Hornik and McAnany (1976:1323).

French television producers also experimented with the educational potential of television in the former colony of Niger. A series of "teleschools" were established at the primary level. The programs were creatively designed and were very popular. School attendance was excellent, and achievement test scores compared favorably to those of students in traditional schools. Unfortunately the project never expanded as originally intended, due in part to opposition from Niger administrators and teachers (Husen, 1995).

The Niger experience encouraged its participants to propose a much larger project in the Ivory Cost. It was hoped that television would provide quality education to the most remote areas of the country. However, a number of factors impeded successful implementation of the project. It is clearly explained by Lenglet, et.al. as follows:

> *Bureaucratic inefficiency and opposition from the educational establishment delayed the construction of facilities, so that the project was handicapped even from the outset. As the project took longer than anticipated to complete, inflation and cost overruns were so great that what initially seemed a cost effective plan became far too expensive. Maintenance of battery-powered television sets in non-electrified areas of the country proved very costly. French was the language of instruction, yet few students had sufficient exposure to it and consequently found the televised lessons difficult to understand. The project was perhaps too ambitious an undertaking, given the conditions surrounding its introduction, and it never lived up to expectations* Lenglet, et al cited in (Melmed, 1979).

India's Satellite Instructional Television Experiment (SITE), conducted a one-year experiment in 1975-76, broadcast school television programming during the day and adult education programs was provided in the evening to over 2,000 villages in six different states. The school-broadcasting program did not succeed in improving attendance or raising scores on scholastic achievement tests, as was initially hoped (Shukla, 1979).

Focusing on learning outcomes to determine the effectiveness of learning, several studies have concluded that there is no significant difference between Instructional Television and Conventional method in terms of examination results (for example, Carey, 2001; Russell, 1999; and Utts, et.al., 2004). Some reports indicate that Instructional Television approach resulted in worse outcome than the traditional approach (Richardson and Price, 2003).

Television has proven to be a potentially effective teaching device, but providing school television is a complex enterprise, and success can depend upon a variety of different factors. Some of these mentioned by

Schramm (1977) were effective management, reliable equipment, cooperation of teachers, meaningful curricular approach, appealing production technique, distribution of relevant materials, and valid research efforts with appropriate feedback for project personnel.

It, therefore, seems reasonable and important to compare learning when the information is presented via classroom lecture to learning when the information is presented via the new computer based multimedia satellite television instruction. This study compares the satellite television instruction and conventional classroom instruction in relation to students' academic achievement.

1.2 Statement of the Problem

These days we are all aware that not only is there an enormous increase in student population of schools but also an increase in knowledge accumulation of mankind. We have to learn many things within a limited time. However, all things could not be given by the teacher in the classroom within a limited school time. Among the numerous means of communication that can contribute to alleviate these problems, satellite television is one.

The integration of technology to education is a growing phenomenon. A tremendous amount of time and money have been devoted to making technology accessible to students with the promise of increased achievement and satellite television is used as teaching machine. Researches on the comparison between instructional television and conventional methods of instruction have mixed results. Schramm (1962) reviewed researches on a comparison study between instructional television and conventional methods of instruction and indicates that 65 percent of every large member of

comparisons findings between televised and classroom teaching, there is no significant difference. In 21 percent, students learned significantly more, in 14 percent, they learned significantly less, from television. Therefore, a closer look at the connection between students' use of satellite television instruction technology and the resultant learning in our country is needed. Schramm, (1977: 16) has suggested that it is thus, an opportune time to conduct a comparative study between satellite television instruction and conventional instruction in relation with student's academic achievement. Based on this argument the study tries to answer the following basic questions.

1. Is there a significant difference between satellite instructional television and conventional school students with respect to their academic achievement?
2. Does satellite television instruction have similar result upon high achievers, average achievers and low achievers?
3. Is there a significant difference in academic achievement between students of different age groups?
4. Do gender differences have a significant difference in academic achievement?
5. Is there a significant difference between instructional television and conventional methods of instruction in student grade result of different academic subjects?

1.3 Significance of the study

The findings of the study could help to have sensible understanding in the teaching -learning processes and the results of instructional television in secondary schools. It could help and provide information to the teacher,

educational administrator, and policymaker about the effect of satellite television instruction on students' academic achievement. It is expected that the research findings could help policy makers, administrators, and teachers to improve students' academic achievement. Moreover, it can also be used as a springboard for further study.

1.4 Delimitation of the Study

The involvement of satellite television in promoting educational activity in Ethiopian Secondary and Preparatory Schools is being utilized in most, if not all, secondary schools with great emphasis.

The researcher would have been more satisfied if the study had included students and teachers attitudes toward instructional television and the study covers cases in all secondary schools of Kembata Tembaro Zone. But, situation did not permit him to do so, and this study will confine itself to the students' roster and schools statistical reports of Shinshicho and Doyogena Secondary Schools of Kembata Tembaro Zone of SNNPR. The study is also timely delimited to 2004/5, 2005/6 and 2006/7 grade 10 students of the two schools.

1.5 Limitation of the Study

The educational process obviously involves more than one or two factors. Past theory and research synthesis suggest that academic achievement is influenced by student difference, environmental variables, the nature of the curriculum, the subject matter to be learned, the availability of learning materials and facilities, teacher qualification, teacher experience, etc. However, this study, deals only with comparing television and conventional instruction in reference to academic achievement of students.

Another major constraint encountered is the unavailability of adequate literature on the subject. Limited financial resource and lack of facilities like computer have affected the study.

Data from urban and rural, attitudes of teachers, students and school administrators towards instructional television would give additional information that could help to study the topic. Thus, future research on this area would focus on these limitations.

1.6 Definition of Terms

Ability levels: Achievement quality differences in schools among subgroups of the population.

Academic achievement: Refers to results in the Ethiopian General Secondary Education Certificate Examination (EGSECE) Grade point Average (GPA) on specified subjects.

Conventional Instruction: the traditional type of instruction encountered in schools, which are teaching by the lecture method, from prepared texts, and with one teacher per classroom (Schmidbauer, 1973).

Instructional Television (ITV): Televised programs in chronological order, which possess structure relative to scope and sequence, and which are intended for a specific audience with defined instructional goals (Schmidbauer, 1973:69).

In the next chapter we will try to explore what has been done in the area of the topic in the past.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This part of the study is devoted to various literature and research findings, which are assumed to have relevance to the topic under investigation. Thus, the organization of the section is based upon the brief history of instructional television in Ethiopia, television, some aspects of ITV research and evaluation, the role and function of television, and the effect of ITV on academic achievement.

2.1 Brief History of Instructional Television in Ethiopia

Ethiopia has a rich experience spanning more than three decades in using radio and television to support primary, secondary and non formal education. The Educational Mass Media (EMA) of the Ministry of Education, which has provided the leadership in this area, traces its origin to the audio-visual center established in1952/53. The center developed, produced and distributed audio visual teaching aids, and even had a mobile team that traveled to villages and schools to show films and slides (Tilson and Demissew, 2000).

In 1965, a year after the introduction of television into the country, television became the first technology for broadcasting educational programs using the facilities of the Ministry of Information (Tilson and Demissew, 2000). At that time, English language teaching program started for grade 1,2,3,9 and 10 in thirty-five schools in and around Addis Ababa. This limited coverage was extended by 1976 to eight private and fifty-five government schools in Addis Ababa (Sebsibe, 1992 E.C). At that time television in Ethiopia was adopted into an educational system with the

demand of audio visual aids to facilitate teaching and learning process (Gartel, 1974:36).

In 1967, the audio visual center was reorganized as the educational mass media center with its own television studio that produced programs in eight subjects for senior secondary schools and five subjects for junior secondary schools. In 1969, EMA started broadcasting from its own studio, an indication of its technical and production attainment. At that time, as a result of increased enrollment in schools, the multiple shift system was introduced, and EMA had to repeat the broadcast of lessons for each shift. Television programs were developed for primary schools as well. But the secondary school programs were interrupted in 1980 (Tilson and Demissew, 2000; Sebsibe, 1992).

In 1986, EMA brought new color television production facilities and started preparing and transmitting television programs in English, Mathematics, Science and Productive Technology for grades 7 and 8. Television programs resumed for junior secondary schools in 1988 and were extended to 1998. EMA has widened its television coverage by using the Television Receive Only (TVRO) of the Ethiopian Telecommunication Corporation. Traditionally, EMA has been broadcasting its educational television programs using the transmitters of the Ethiopian Television to schools in 208 towns (Tilson and Demissew, 2000).

In spite of the enormous experience in Ethiopia using educational broadcasting and its full acceptance by educators at all levels of the school system, there were challenges. With the decentralization of the education system, the number of programs has greatly increased and it has become difficult to distribute materials, radios and television sets. Also, despite the

fact that schools are advised to adjust their timetable to accommodate the broadcasting schedule, sometimes this schedule did not match with the teachers' schedule. In addition, with the introduction of multiple languages of instruction, there were increasing demands for broadcasting time that may be difficult to meet. But at present, with the advent of satellite such problems are resolved. EMA has increased its radio and television broadcast coverage through agreements with organizations like World Space and the Ethiopia Telecommunication Corporation (Tilson and Demissew, 2000).

At present, the New Education and Training policy of Ethiopia has given due attention to the utilization of instructional technology particularly television.

EMA launched plasma television programs (satellite television instruction) since 2004 for both general secondary and college preparatory schools (Grades 9-12). The educational transmission comes from South Africa for six subjects, English, Math, Biology, Physics, Chemistry, and Civic and Ethical Education (Kedir, 2004).

2.2 Television

What is television? Once a boy replied, "It is like having radio and film at the same time." In fact television is like radio in that it can communicate news as it happens and it is like a film in that it appeals to both sight and hearing (Mohanty, 1984). Schmidbauer (1973) describes television as the transmission and reception by electromagnetic wave of moving visual images and of the sound produced by or accompanying them.

This can clearly show that television belongs to the family of audio visual communication media, which are able to transmit sound and images.

Likewise, Mohanty (1984) indicates that television has been developing into an important part of the field of audio visual education. He further explained; it is taking its place along with the older types of aids such as the motion picture and the tape recorder.

Whatever be the level of learning or type of learning, the basic learning, experiences or the inputs of learning have to reach the pupil through his senses. Our senses are gateways to acquire knowledge (Samptha, et al., 1984). Wittich and Schuller (1962) argued seeing and listening are the primary means of human learning. What we see and hear markedly influence how we behave. Because, teaching at its best is the stimulation and direction of learning. What learners look at and listen to are major factors in the effectiveness of learning.

One of television's most obvious characteristics is its visual aspect. Merringoff, et al. (1983) describes as humans intuitively grasp the power of images to convey meaning, as can be seen in the old adage that "values a picture at a thousand times the value of a word." Research in past years has proven what we intuitively know: our brains deal with images differently than print.

Television offers information in multiple forms: images, motion, sound, and text. The richness of these forms of information benefits learners. Wetzel, et al. (1994) stated that by enabling them "... to learn through both verbal and visual means, to view actual objects and realistic scenes, to see sequences in motion, and to view perspectives that are difficult as impossible to observe in real life." In a sense it is a multi media visual equipment by which different kinds of means, media and materials can be utilized for producing and utilizing its programs.

These possibilities evidently do exist for exceeding the limitations of the classroom teacher and developing superior instruction through the use of ample materials (Nishimoto, 1969). These conditions made television to be one of several promising tools now available to strengthen the instructional system and make it more responsive to individual and social needs. Murphy and Gross (1966) further explain that television works as an educational tool. There is no question of its validity as a medium of instruction. Students can learn from television, as they can learn from teachers and texts, radio, recordings and films. But educators are still far from grasping the real nature and potential of television.

2.2.1 Educational Television

Educational television in many countries finds its roots within the broadcasting system. At the outset, then, educational television was synonymous with schools broadcasts, which were steeped in the tradition of public service broadcasting. Murray (1987) implies that educational television in the late fifties and early sixties meant television broadcasts for schools.

According to Lawlern (1961) educational television (ETV) used to denote programs broadcast to a wide public with the intention of broadcast its knowledge or reinforcing other sources of information. Husen (1995) explains that educational television is a broad term and includes the educational use of any programming which provides relevant information, regardless of whether it was designed specifically for a given course of study. Some like: Saltrick, Honey and Pasnik (2004) argue that any serious drama, serious music, documentary or news program should be considered as ETV.

We can see this much used and over worked phrase has taken on several meaning, over the years. New words and phrases, and new meanings for old ones, have evolved in the field of instructional technology.

Wood and Wylie (1977) in their part defined ETV as sequential, organized series of presentations having a specific body of content, usually designed primarily for non credit viewing at home but often viewed additionally in the classroom. Hilliard (1958) argued that one of the primary goals of educational television has been to inform the general public via a common body of knowledge.

The use of the term educational television in these senses is compounded by the fact that many public broadcasting stations often use "ETV" to refer to their school programming. Many instructional telecommunications practitioners tend to use "ETV" as a synonym for public broadcasting. We can observe that educational television generally denotes any television used for education of the community. It has come to mean many things, but, basically it depends upon for cultural programs, for intellectual stimulation, for serious information, and for educational opportunities.

2.2.2 Instructional Television

Instructional television is the application of the methods and technology of television applied to purposeful instruction; the result of this process are carefully designed, validated and empirically tested materials (Ackerman and Lipsitz, 1977).

The term instructional television (ITV) is often used to denote programs where the broadcast are intended to be the core of a course of

instruction (Husen, 1995). Samptha, et al. (1984) clearly described that instructional television are programs related directly to an organized program of formal instruction and are directed to viewers who come under formal education program. Likewise, Haney and Ullmer (1970) used the term instructional television to mean direct instructional uses of television and related electronic media for specific teaching and learning applications in any formal educational or training institutional situation.

These indicate that school television is a form of ITV developed for use in public schools, and most corporate training programs would probably be referred to simply as a type of television instruction.

To sum up, educational television and instructional television are not synonymous terms, although people often use them as such. Therefore, as a convenient means of differentiating between community educational television programs and the use of television for direct formal instruction, the term instructional television (ITV) is used as different from (ETV).

2.2.3 Traditional Organization of ITV

The audience for educational television is much large and the interest group is much wider. The attempt to address the needs of such groups was one of the factors which led to the emergence of different styles of educational television.

Television may be used for educational purposes in several ways. Wood and Wylie (1977); Mohanty (1984) considered television within at least three different educational settings. These are: direct instruction, informal education, and in service teacher education.

2.2.4 Direct Instruction

Direct teaching by television has been recognized in a number of schools as being a means of improving instruction. Wood and Wylie (1977) have said that the most obvious use of school television is that of beaming instructional materials directly to students usually in the classroom setting. There have traditionally been four categories of this direct instructional use.

2.2.4.1 Total Television Teaching

Total television teaching relatively little used category refers to situations in which television is utilized for the total instructional job. No classroom teacher assumes any instructional responsibility for the actual presenting of material Wood and Wylie (1977). Similarly, Cassirer (1962) also said that the total teaching responsibility is carried by the television teacher. Ackerman and Lipsitz (1977) contend that total television instruction is effective, where careful preparation and developmental testing substitute for student teacher interaction to traditional classroom instruction. Wood and Wylie (1977) have suggested that a teacher or monitor or aide of some sort is usually present, especially at the lower grade levels, for obvious administrative and supervisory purposes.

Total Television teaching is recommended most often employed within business, industrial, or military training programs in which the learners are mature and self motivated, with awareness that their advancement (and possibly their very lives) could depend upon learning the material (Wood and Wylie (1977). However, Cuban (1986) reported that television has been rarely used to totally replace teachers in any country, and television is usually used in coordination with or to supplement the regular curriculum. Cuban further describes that total instructional television

programs in countries such as American, Samoa and El Salvador had met with initial enthusiasm, but declined in popularity after the novelty wore off and both students and teachers demanded less television and a return to regular classroom activities

2.2.4.2 Supplemented Television Teaching

The classroom teacher supplements the presentation of the television teacher in the preparation and follow up of the lesson or supplementary instruction, supervision and assignments is given to students who view programs in classrooms (Cassirer, 1962). Wood and Wylie (1977) also refer this category to the use of school television in a scheduled, routine manner, with instructional television sharing the instructional load with the classroom instructor. There is heavy, reliance upon the structure of a televised instructional television series.

Ackerman and Lipsitz (1977) argue that television is most effective when combined with other learning experiences. This has been burnout by a large number of studies using television in conjunction with traditional instruction. Supporting this Wood and Wylie (1977) said that the combined method is most effective when the separate elements are designed to work together. For instance, where the medium is the major resource, a human instructor might be used for motivation, introduction and follow-up.

This use of school television is also some times called "team teaching television" referring to the team of the on camera teacher and the classroom teachers.

2.2.4.3 Television supplementing classroom Teacher

The student receives his teaching primarily from the classroom teacher, while television programs are received at less frequent intervals (e.g. once a week) and present materials which add to the classroom lesson (Wood and Wylie, 1977 and Cassirer (1962). The term "enrichment viewing" is sometimes used synonymously with "supplemental viewing" Here the television portion of the course certainly is not integral to the total curriculum.

As we examine other means of thinking about supplemental television, we will find that these traditional categories of direct instruction may be useful for reference purposes (Wood and Wylie, 1977). This is probably the most widely used pattern of television teaching on all grade levels.

2.2.5 Informal Education

In this area it might include the entire realm of public television (Wood and Wylie, 1977). Such a media based educational scheme may be aimed at individual or group audiences. It may or may not be present in the form of regular lessons or lectures. There may or may not require registration or enrolment of students. It may or may not be framed into an institutional educational structure. It may or may not lead to examinations, checking of results (Waniewicz, 1972).

These are also including educational programs for children and adults that are not related to any specific course. These programs are designed for informal learning, but they may be quite directly instructional, as in teaching literacy, or a foreign language or how to improve crop

fertility, or they may again serve indirect learning purposes, by stimulating interest in the development of micro economics or by building up confidence to improve personal standards of literacy through participation in local classes (Hawkridge and Robinson, 1982).

2.2.6 In-Service Teacher Education.

In order to improve the quality and qualifications of teachers the new accreditation for teacher certification is announced in our country. The medium of television would help to broadcast instruction for the purpose of improving teacher quality and realizing the full benefits of the new educational system.

2.3 Some Aspects of ITV Research and Evaluation

Emerging as a precious asset in pedagogy, technology is viewed as a potential element that can influence traditional education. Learning effectiveness has been a major issue in recent research, and the growing repository has implications on all level of education with the advent of new technologies.

Since the first television was introduced in education, many studies have been conducted to investigate the effects of educational television. Researchers Niemiec, Sikorki and Walberg (1996) believe that the use of technology is inherently 'good' for learning.

According to Mohanty (1984) television is a new medium of communication, not a new method of teaching and learning. This indicates that the effective use of television is based upon the some fundamental educational and psychological principles of conventional learning. In relation to this, Russell (2002) states that the application of old solutions to

new problems in online learning usually leads to the 'no significant difference' phenomenon in which ITV applications tend to produce results similar to those in traditional pedagogy.

Instructional television is at least as effective as ordinary classroom instruction, when the results are measured by the usual final examinations or by standardized tests ... [And] employing the usual tests that schools use to measure the progress of their students. Schramm (1962) indicates that 65 percent of every large member of comparisons findings between televised and classroom teaching, there is no significant difference. In 21 percent, students learned significantly more, in 14 percent, they learned significantly less, from television. Similarly, the most consistent finding comparing conventional instruction with instructional television suggests no difference between the two in student achievement (Phipps and Merisotis, 1999). Reviews reflecting this conclusion date back to Dubin and Hedley (1969), who looked at 381 studies from the 1950s and 1960s. Reviews conducted since then (Clark, 1983; Cohen, Ebeling and Kulik, 1981; Jamison, Suppes and Wells, 1974; Wetzel, Radtke and Stern, 1994; Whittington, 1987; Zigerell, 1991) have continued to find no differences.

The primary goal of instructional television in this day must be to raise quality and improve classroom utilization. A mere expansion of practices is not enough. The way forward is necessarily a new way. Regarding this Murphy and Gross (1966) said:

> *Television is "indispensable" to solving the crises of quantity and quality in the schools. In the intervening years, exploding enrollment, the scarcity of good teachers and unceasing new demands on curriculum have reinforced its utilization.*

But (TV) has not had a profound effect on American and other countries education. The course of events has not fulfilled the revolutionary visions of TV's prophets. But TV is still far from the point of playing an integral role in education.

In the communication of information and ideas, in affecting attitudes, in motivating thinking, learning and action in principle, there should not emerge consistent difference between radio, television, film, print or face-to-face communication. This has been proven by research carried out in different projects in many countries. Clark (1983:445) reviewing the existing comparative research on media and concluding that "... media do not influence learning under any conditions" rather "... media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes change in our nutrition."

Waniewicz, (1972:36) contends that whatever vehicle is used to communicate the message, the amount of information absorbed, assimilated or accepted by the learning will depend on some factors: pertinence and credibility of the content, the clarity of its presentation on one hand and on the other, the abilities of the students, their interest in learning, and the amount of work they will devote to master the subject affect greatly.

On the contrary, a study of university of Toronto undergraduates studying anthropology by various instructional media showed that "media do influence retention in terms of immediate and delayed retention tests. The researchers concluded that "the superiority of TV group over radio and reading reconfirm previous experiments showing that two sense modality

presentations are more effective than one sense modality presentations (Murphy and Gross, 1966:50).

2.4 The Role and Function of Television

To examine how media may most advantageously be applied in the learning situation, one needs to examine the characteristics of a given medium.

One of the principles of instructional television character is the fact that the studio teacher can speak directly to the students in the classroom. This directness of the spoken word is quite apparent to TV when compared to the indirectness of printed words in text books (Nishimoto, 1969). The fact that television gives the appearance of direct eye contact on camera instructor, looking directly at the camera lens, creates the illusion of establishing eye contact with every individual viewer (Wood and Wylie, 1977).

Of all today's mass media, radio and television are unexcelled when it comes to promptness and simultaneity. Hence, they have been able to report incidents immediately and to give a fresh view of conditions from the actual place (Nishimoto, 1969). Whereas the text book centered methods are not satisfactory in that they are unable to adapt to the daily changes and progress of society. Besides, television (Wood and Wylie, 1977) is also used as a means of rapid revision of curricular materials (contrasted with text books and films).

This is a point in which instructional television remarkably different from textbook educational material.

An important attribute of TV is the ability to use both auditory and visual symbol systems. Wood and Wylie (1977) state that television can be used to combine and present other audiovisual resources and materials. In most of the studies, the combined use of visual and auditory symbol systems resulted in more recall than visual only and audio only presentation (Kozma, 1991).

2.4.1 Advantages and Limitations of Instructional Television

The aforementioned characteristics of the medium enable planners and educators begin to plan specific applications of television. These characteristics lead to certain advantages of the tool, in some situations, and to distinct drawback in other situations.

2.4.1.1 Advantages of Instructional Television

Television can convey personality. When an able, warm, and friendly personality is before the camera, his presence permeates the classroom as though he was actually present (Brong, 1964). Wood and Wylie (1977) also indicate that television can also be a means of sharing resources including good teachers. Master teachers or important activities can be brought into the classroom with a feeling of "being there" that is not possible through reading or discussion about the person or situation. A close-up of the teacher on the television screen gives the student a sense of closeness to the instructor, possible only in very small groups (Brong, 1964).

Moreover, Tyler (1960) expounds that the television teacher is continually looking directly at and speaking to each student as an individual. Hence, the pupil often derives emotional security from this relationship as well as being highly motivated toward learning activities. Brong (1964) calls

this creates sense of reality and intimacy between the television teacher and the students.

Instructional television brings efficient and quality instruction. Because television teachers usually have large number of viewing students, they make every effort to ensure a superior presentation. On top of this Nishimoto (1969) said that because television has characteristics of quantitative and breadth, it is possible to spend ample time, money and materials to prepare the programs on the principles: understanding while listening, understanding while watching.

Moreover, television is not a self contained entity. Rather it involves different persons from different professions. Regarding this Tyler, (1960) said:

> *Television teachers are aided by classroom teachers, supervisors, subject matter specialists, and television producer directors. Besides, they have the rich resources of demonstration equipment and materials and adequate time for planning and rehearsal. Since a daily television lesson is usually a full teaching load.*

This shows that effective television teaching demands more preparation and the assistance of more specialized personnel than do conventional instruction.

Through the medium of television it is possible to communicate information and skills quickly to large groups situated at far distance from the teacher. Supporting this Wood and Wylie, (1977) have argued that as a means of dissemination. Television is a medium of wide spread distribution. It is among the better methods of reaching a great member of people at a time. Besides, Brong (1964) said that while it is certainly true that television

is a superb means for the widespread distribution of mediocrity, it is equally certain that the attributes of an excellent teacher can be communicated to viewers.

Furthermore, as a means of dissemination, television is a medium of widespread distribution. It is among the better methods of reaching a great member of people at one time (Wood and Wylie, 1977).

Instructional television focuses attention on the significant aspects of the presentation. Television is edited reality through the eye of the camera, skillfully used, the learner sees the things that are significant and important to the learning experience extraneous and irrelevant material is eliminated (Tyler, 1960).

Instructional television can do things classroom teachers can not. For example, through extreme close-ups enlarge tiny objects like the parts of a flower or the movement of a watch. It can amplify tiny sounds such as the heart beat of a mouse or the vibration of a tuning fork. Evans, Stacky and Tregenza (2003) also added that very expensive experiments which cannot be conducted in each classroom can also be demonstrated through such a mechanism.

It can also give a simultaneous view of processes and phenomena in a demonstration, as in a surgical operation or a microscope slide. It can superimpose, or present side by side on a split screen, things which are related, such as technical terminology in conjunction with objects or processes (Tyler, 1960).

When student have no opportunity to visit some places which are important for their lessons, television can be a complement. Tarbet

(1961:235) describes that the electronic field trip by which students may visit far away places is a distinct possibility. It is possible to visit places which are difficult to reach or which might be considered dangerous.

It can induce learner participation during the broadcast. Viewers can take part in the broadcast by answering questions orally as a group or as individuals called upon by the classroom teacher. They can fill in charts from observed data. They can carryout experiment or practice skills with guidance from the television teacher. They can repeat foreign words or technical terminology, or they can sing. Even more significantly, they can think, weight, judge, appreciate, became curious, make inferences, become aware of relationships, or form values (Tyler, 1960).

Besides, since students use at least two of their senses in the television instruction, seeing and listing, their attention span as well as the potential to memorize the contents will increase, compared to only attending a teacher's lecture in a traditional classroom (Getnet, 2008). Frantz (1962) also describes the advantage of instructional television as it is a satisfactory method of handling courses with large enrollments, for it combines efficient use of personnel and space with comparatively low initial and maintenance costs.

All of these properties make possible a superior and more efficient job of presentation by the television teacher. Thus the classroom teacher is not only freed of this responsibility, but his job is done for him in less time (Tyler, 1960).

2.4.1.2 Limitations of Instructional Television

So far the importance of television, as deemed valuable by various authors, have been discussed. However, this should not mislead us to consider the medium as a flawless and only advantageous means. There is also the other side of the coin. Certain characteristics of the television medium impose limitations on its teaching possibilities.

Time limitations. Television is broadcast under rigid limitation of time. This has resulted in a compressed, concise form of communication and with no interruptions (Brong, 1964). This make lack of opportunity for a student to ask a question just when it occurs to him. When he waits until the end of the lesson to hand in a written question, it may no longer seem important to him because his attention has by then turned to other matters.

Lack of reciprocal relationship. In television teaching, there is only one-way flow of instruction, with no opportunity for visual feedback from student to teacher. The teacher on television can never enjoy the rapport with his/her students that is possible with a true interaction of minds. Teacher can not tell whether she/he is stimulating her/his classes or confusing them (Brong, 1964). But, human life holds meaning through communication and dialogical relations at the heart of any educational experiences. Hence, Instructional television denies this type of dialogical relation. It positions students only in the role of passive listening-obedience and taking orders rather than negotiating meaning (Kedir, 2004). Literature supports the theory that interactions among students and between the students and teachers enhance the students' opportunity for learning to think critically in the traditional classrooms (Brookfield, 1987). Otherwise, the students' role will be restricted only to listening. This may, at most, result in rote and passive

learning. This can be combated, impart, by having an auxiliary instructor in the classroom for discussion periods after the television presentation.

Lack of flexibility. In television teaching there is a single fixed presentation for an audience that generally is heterogeneous in interest, knowledge, and learning capacities (Brong, 1964). Instructional television favors a unitary or monolithic style of learning because of its pre-programmed, non-rewind able, non-repeatable, and auditory and visual characteristics. The case is a "one-size-fits-all" approach to education and thus fails to cater for the diversity of students and their needs and interests (Kedir, 2004; Clark and Mayer, 2003).

Fugitive impact on the audience. Television broadcasts have the disadvantage of being fugitive. Because it ordinarily leaving no permanent record with viewer except in memory. Regarding this Kozma (1991) stated that information presented on broadcast television is transient and ephemeral. It is presented continuously at a given time and pace that is not under the control of the user, and once presented, it is not retrievable other than from memory.

Eventually, this problem will be solved when web TV resumed its function. Baran (2002) informs that the American online, @ Home, and yahoo announced their plans to begin offering the Internet over home television sets.

The advent of instructional television has triggered some of the sharpest debate ever heard in educational circles. Barnes (1965) indicates the condition by saying: the intensity of the controversy appears to spring from

recognition of the sweeping possibilities of television and its general detachment from local classroom control.

Proponents of instructional television speak with concern of the knowledge explosion. These spokesmen urge us to use television, not as a basic educational diet or total teaching by television, but as a means of extending and broadening existing program (Barnes, 1965). Tyler (1960) reminds that: "it must always be remembered, however, that direct teaching by television is by no means the whole of teaching. It is simply the presentation part of teaching the telling and showing." Even the most enthusiastic advocates of direct television teaching assure us that the television teacher will never replace the classroom teacher. The role of the latter will be modified but that he will continue to be a key figure in promoting pupils' growth (Jewett, 1961).

It must always be remembered, however, that direct teaching by television is by no means the whole of teaching. Jewett, (1961) has said:

> *Direct teaching is simply the presentation part of teaching, the telling and showing. It can help in motivating learners; it can expound ideas and concepts and develop them logically; it can present models and develop emulated; it can raise question and pose problems; and it can provide some drill. But it can not study individual learners and their interests and needs; it can not provide laboratory experience; it can do little toward the development of creativity and inventiveness; and it can not provide much practice in applying principles, gathering data, and handling group problems democratically. Indeed, most of the learning activities necessary to achieve significant educational objectives take place under the guidance of the classroom teacher or are handling by exceptionally mature students on their own.*

The crucial element in the use of instructional television is the relationship existing between the classroom teacher and the television screen.

But opponents of instructional television see it in another light. Instructional television has been called "educational crop-dusting", "brain-washing," and "tubular trauma." Those who oppose it point out that it offers one-way communication only. Because it precludes any real interplay of ideas between pupil interests, adjust to individual differences, offer first-hand experiences, or provide effective guidance for pupils in a learning situation (Barnes, 1965). These serious limitations have led some educators to conclude that (the new medium) ITV is basically incompatible with modern, child centered programs.

2.5 The effect of ITV on Academic Achievement

Academic achievement attempts to measure abilities an individual has acquired as a result of specific study in a given instructional sequence (Dunkin, 1987). Cameron and Whellem (1983) describe academic achievement in relation with school effectiveness they state as "when school effectiveness is reduced to a single variable, it is generally student achievement." However, the research on student achievement appears to be open to doubt, since several of the studies contradict one another. Some studies (Isernhagn, 1999; Frear and Hirschbuhl, 1999; Middleton and Murray, 1999; Liao, 1998) have found that student use of technology significantly increased student achievement over time. Yet, Hecht and Roberts (1996) found that although student gains were greater in technology based classroom than in the traditional classroom, the difference were not statistically significant.

Television as a medium of instruction can be used effectively or ineffectively. Its influence for good or ill depends on what goes into the medium and how it is used (Tanner, 1961). The available research thus suggests that audience characteristics such as individual difference, age, sex, preconceptions of the medium, and motivation can have an important impact on how well viewers will retain the information presented on television.

Children are not created equal, nor do they become more alike as they grow older. Rather, by the time they enter school the inequalities among them intellectually, physically, and in social behavior have increased many fold. As they move up ward through the grades the differences increase even further.

Mental ability is the personal variable that has been most studied, usually measured by one of the standard tests of school performance. The findings in general do not distinguish among the media, but rather show that abler student, other things being equal, tend to learn more from any medium than less able students (Schramm, 1977:39).

Cassirer suggests that one way to reduce the differential effect of general ability is to use pictures or diagrams, the presumed effect is to make it easier for less able students to transform the information in the lesson to a form in which it can be retained and perhaps to slow up the able student who is more accustomed to dealing with abstractions (Cassirer, 1992).

The principle says that multimedia design effects are stronger for low knowledge learners and for high- spatial learners. In other words, since high knowledge learners already have some background knowledge, they might not need the additional instruction offered by multimedia learning. Also,

high spatial learners are more likely able to integrate the visual and verbal representations offered by multimedia presentation.

Clark and Mayer (2003); Kedir (2004) argue that student learn in essentially the same way, through building on preexisting cognitive structures and encoding this understanding into long term memory. Accommodating different learning styles may seem appealing to ITV designers who are fed up with the "one-size-fits- all" approach. What individuals learn depends upon their personal experience and abilities as well as upon the content and style of the programme.

The concept of learning styles promotes the idea that instruction should be flexible enough to support different learners. Tharp (1992) stated that a students' learning style will strongly influence achievement in the classroom. Consistent with Tharp, Debello (1985); and Miller, (1985) stated that students learn more and like learning better when they are taught their identified learning styles. Giannitti (1988) further stated that most students can master the same content, but how they master it is determined by their individual learning style.

Student motivation is an important factor to educators. Educators want to be able to motivate their students to learn the content. A group of educators in Nebraska identified technology as a major catalyst for encouraging students to interact with the content (Serbhagen, 1999). Yet, technology alone is not the answer to the complex problem of motivating learners (Mellion, 1999). There also exists some evidence that suggests that viewers' motivation will make a difference in terms of how much information they will remember from television. Brown, et al. (1995) found that personal interest in further learning and in the subject matter itself was

positively related to viewers' memory for factual information from instructional television segments.

According to some researchers, students with poor educational background frequently lack interest in learning or lack confidence in their ability to learn (Cross, 1988; Knox, 1989). Thus, factors such as students' lack of interest or lack of confidence in their ability to learn might have contributed to their low academic performance.

In some studies older children score better on recall tests than younger children (e.g. Van Evra, 1998), they have more general background knowledge and information. Other studies, Clifford et al. (1995) for example, found that older and younger children learned at the same rate. Scholars have also speculated about the rates at which boys learn from television compared to the learning rates of girls. But, Cliffrord, et al. (1995) found there was no gender gap. Girls learned and were interested in science at the same rates as boys.

Academic achievement is also related to many other inputs among these teacher attitudes and teacher training are the major factors. When teachers are supported by their superior as well as their colleagues, they are likely to experiment and take risks to improve the quality of instruction (Hoffman, et al., 1994). Commitment of teachers to the school and welfare of students has been shown to be a critical aspect of effective schools (Rosenholtz, 1989). Teacher committed to students are likely to spend the extra time and effort needed to motivate and nurture students, for example, they are available after school to tutor and take an interest in students who have special problems (Hoy and Miskel, 1991). Clearly,

expressive activities and instrumental activities go hand in hand with student achievement in effective schools.

Research has shown that the attitude of the classroom teacher plays a substantial role in the final success of any television lesson. On the contrary, a television lesson viewed by the class of a teacher who is resistant toward television has little chance of being effective. Diamond (1962) has suggested that it is apparent that we must not only inform our teachers of the potentials of television but that we must also help them develop a positive attitude toward exploring the use of the medium within their own classrooms. Television is not intended to replace the teacher. And it will not, by itself ensure learning.

The teacher training is also a critical part for the effective implementation of technology. Hecht and Roberts (1996) have said that teachers have a hard time integrating technology in an already full curriculum. When teachers are in classes with appropriate implementation of technology trained, technology implementation in to instruction increases (Middleton and Murray, 1999). However, forcing technology down the throats of teachers without adequate training and support is unlikely to improve student performance (Mellon, 1999). Middelon and Murry (1999) conform that staff development programs on the implementation of technology in the classroom are as crucial as the actual purchase of the technology. For changes to occur in education, shifts must take place at the classroom level, in the way teachers teach, and at the school and district levels in the priorities assigned by educators, government officials and other decision makers (Stephen, et al. in Champman and Mahlck, 2004).

Regarding this Salomon, Perkins and Globerson (1991) pointed out that "No important impact can be expected when the same old activity is carried out with a technology that makes it a bit faster or easier." The activity itself has to change.

CHAPTER THREE

METHODOLOGY

In this chapter procedure of sample selection, data collection, analysis and the instrument used are described.

3.1 Participants

The participants for this study were students from Shinshicho and Doyogena Secondary Schools of Kembata Tembaro Zone of Southern Nations Nationalities and Peoples Region (SNNPR). Most of the students came from peasant families. Approximately 70% of the students were males. Both schools use the same national curriculum but employ different classroom practices. Shinshicho Secondary School has used a live, nationally broadcasted instructional television program for some selected subjects for 35 minutes of the 45 minutes assigned for each lesson period, since the end of 2004. Doyogena Secondary School does not use the instructional television; instead it is using traditional face-to-face methods of teaching.

The population of this study was 5254 grade ten students who were enrolled at Shinshicho and Doyogena Secondary Schools and they have taken the Ethiopian General Secondary Education Certificate Examination (EGSECE) in 2004/05, 2005/06, and 2006/07 academic years. Three consecutive years' data were taken because, usually new programs in the very beginning will not as effective as intended rather they improve year after year. Therefore, the average of the three years data was taken for the study. Three thousand five hundred fifteen students were from Shinshicho

Secondary School and the remaining 1739 students were from Doyogena Secondary School.

Out of 5254 grade 10 students of the two schools, 705 were discarded from the analysis because their name and grade nine results were not found in the student rosters of the respective academic years.

3.2 Variables included in the study

3.2.1 Independent Variables

In this study Instructional Television (ITV), Conventional methods of instruction, ability levels, age, sex, and six academic subjects that have been provided with instructional television since 2004/5 academic years that is, English, Mathematics, Physics, Chemistry, Biology, and Civics were selected as independent variables.

3.2.2 Dependent Variables

Academic achievement is considered to be dependent variable of the study. It includes grade of English, Mathematics, Physics, Chemistry, Biology, Civics and their grade point average.

3.3 Instrument used

3.3.1 Document Analysis

Archival record was used to obtain data pertaining to the independent and dependent variables in the study.

3.4 Procedure

3.4.1 Sampling procedures

The researcher has worked as a school director in Shinshicho Secondary School when the satellite television started broadcasting instruction nationally for the secondary and preparatory schools in 2004/05 academic year. And he has developed a zeal interest to see if satellite television instruction has to do a difference in students' academic achievement.

Shinshicho and Doyogena Secondary Schools were purposefully selected. The researcher has selected these two schools for two main reasons. First, it is easy for him to find relevant data from Shinshicho Secondary School. And Doyogena Secondary School was selected, because this school was using conventional methods of instruction when instructional television was beginning through out the country.

Shinshicho Secondary School had 19, 16 and 12 sections of grade 10 students in 2004/05, 2005/06 and 2006/07 academic years, respectively. Whereas Doyogena Secondary School had 5, 8 and 6 sections of grade 10 students in 2004/05, 2005/06 and 2006/07 academic years, respectively.

Stratified sampling and simple random sampling were employed to select sample of the study. First, based on the students grade nine total average results students were categorized into three groups. Grade nine average results were used to control students' prior ability because past performance highly affected students' academic achievement. Clark and

Mayer (2003) state that what individuals learn depends upon their personal experience and abilities. Students with average scores in the upper and lower 25 percent of the distribution for their section of grade nine were considered to be the high and low ability levels, respectively. Students in the middle 50 percent of the distribution composed the medium ability level. Each of these three groups was further divided by gender. So that, sample participants selected from these stratified groups will maintain their group representativeness.

Finally, using simple random sampling (lottery method) proportionate member of participants was selected from the stratified groups. From 19 sections of Doyogena Secondary School 630 students and from 47 sections of Shinshicho Secondary School 1260 students were selected based on their grade nine average results of the two semesters.

Therefore, the target population of the study consists of 1890 subjects of which 486 (207 females and 279 males), 921 (318 females and 603 males), and 483 (96 females and 387 males) students were selected as low achievers, average achievers and high achievers, respectively.

3.4.2 Data Collection

Since this study is quantitative, it is highly depended on documents to obtain the relevant data of the study.

Grade nine average results of the selected sample participants were collected from the record offices of the two schools. Besides, the selected subjects' Ethiopian General Secondary Education Certificate Examination (EGSECE) results were obtained from the statistical reports sent to Kembata Tembaro Zone Education Bureau.

3.4.3 Data Analysis

The purpose of the study was to examine the effectiveness of instructional television as total teaching strategy to the selected six subjects namely: English, Mathematics, Physics, Chemistry, Biology and Civics at Secondary School. To perform the analysis, Statistical Package for the Social Sciences (SPSS) version 15 was used.

Different statistical techniques were employed to analyze the obtained data. These include descriptive statistical values such as means, standard deviation, percentiles and minimum-maximum scores. The main statistical analyses were carried out using t-test and two-way analysis of variance (ANOVA).

First, t-test was used to see whether or not there is a statistically significant difference between Instructional Television (ITV) and Traditional Instruction (TI) or Conventional Instruction in relation to students' academic achievement.

Second, two-way ANOVA were employed to find out the interaction effects of each independent variable and methods of instruction on academic achievement of the student. The findings will then be summarized and conclusions can be made.

CHAPTER FOUR

RESULTS

In this section, the main results of the study are presented in the following sequence: preliminary descriptive statistical values (mean, standard deviation, number of observation and percentile for the variables of each group identified. A t-test analysis was used to examine the significant difference between satellite television instruction and conventional instruction. A two-way ANOVA was employed to test if there is significant difference in academic achievement between ability levels with methods of instruction, gender of the student with methods of instruction, and students' age with methods of instruction. Finally, an independent t-test comparison was used to test academic achievement of student between the two groups with different academic subjects.

The total sample size of the study was 1890 of this 621 were females and 1269 were males. From 1260 Shinshicho Secondary School students 414 were females and the remaining 846 were males. Out of 630 Doyogena Secondary School students 207 were females and 423 were males. These show sex was unequally distributed in the two schools.

A t-test was selected as statistical models. The mean scores and standard deviation of each of the two groups were computed in the result section. A t-test was performed to determine if there was any significant difference in means grade point average between instructional television group and conventional instructional group as a whole.

The t-tests were also used to test if there was statistically significant difference in mean grade point between instructional television group of

students and conventional instructional group of students with each academic subject.

Furthermore, analysis of variance was made to determine if there was significant difference in means grade point average between students' ability level, sex, and age. The significance level for all statistical analysis was accepted as 0.05 and all the results were tested with two-way ANOVA.

Teaching Methods and Academic Achievement

The instructional television group got a mean GPA 1.6596 with a standard deviation 0.6114. The conventional group obtained a mean GPA 1.7204 with a standard deviation 0.5395.

TABLE 1: Academic Achievement of students by Methods of Instruction and Grade Point Average

Method of Instruction	Grade Point Average (GPA)			
	No	Mean	Standard Deviation	percent %
ITV	1260	1.6596	.6114	66.7%
Conventional	630	1.7204	.5395	33.3%
Total	1890	1.6799	.5890	100.0%

A t-test was used to test whether or not there is a significant difference in academic achievement between instructional television and conventional instruction groups.

The observed value of t for 1888 degree of freedom assuming equal variances and a two-tailed test at alpha 0.05 is 2.211. But, Levene's test shows that the equal variances assumption is not hold true. Therefore, we use a t-test with unequal variances assumption. The observed value of t for

1407 degree of freedom assuming unequal variances and a two-tailed test at alpha 0.05 is 2.205. Hence, it indicates that there is a statistical significant difference in academic achievement between instructional television and conventional instruction groups. Therefore, teaching secondary school students with conventional methods of instruction results better grade point average than those students taught their education with satellite instructional television methods of teaching. The collected data also indicates that conventional group students better performed than instructional television group students in academic achievement. (See the detailed from Appendix A).

Ability Levels and Academic Achievement

There is a difference in mean GPA between student ability levels. Students who classified as low, average and high achievers received a mean GPA 1.3682, 1.5986 and 2.1483, respectively.

TABLE 2: Academic Achievement of Students by Achievement Level and Methods of Instruction

Dependent Variable: Grade Point Average (GPA)

Method of Instruction	Students Ability level	Students Ability level			
		No	Mean	Standard Deviation	Percent %
ITV	low ability level	324	1.3142	.4633	17.1%
	average ability level	614	1.5790	.4928	32.5%
	high ability level	322	2.1609	.6336	17.0%
	Total	1260	1.6596	.6114	66.7%
Conventional	low ability level	162	1.4763	.5007	8.6%
	average ability level	307	1.6379	.4360	16.2%
	high ability level	161	2.1231	.5400	8.5%
	Total	630	1.7204	.5395	33.3%
Total	low ability level	486	1.3682	.4817	25.7%
	average ability level	921	1.5986	.4752	48.7%
	high ability level	483	2.1483	.6037	25.6%
	Total	1890	1.6799	.5890	100.0%

The variation in students' ability levels were examined if they have any effect on academic achievement of the two groups' students. Two independent variables were arranged in a 2x3 (methods of instruction x ability levels) to see the effect of methods of teaching (Instruction Television and Conventional Instruction) on academic achievement of ability levels (high, average and low) participants was used.

The result obtained after a treatment of two-way ANOVA has shown that there is a statistically significant difference in students' academic achievement among the ability levels. Moreover, there is a considerable difference in mean GPA between Instructional Television (ITV) group and Conventional group. The high and average achievers of the instructional television group and conventional group received almost similar mean GPA. (See Table 2)

The results of Table 3 depict that there was a statistically significant difference $F(1, 1884) = 5.478$, $p < 0.05$) between students who studied with instructional television and conventional instruction in their academic achievement. There was also a statistically significant difference $F(2, 1884) = 250.129$, $p < 0.05$ among high, average, and low achievers in their academic achievement. There was a statistically significant difference $F(2, 1884) = 4.117$, $p < 0.05$ between the interaction of methods of teaching and students ability levels in their academic achievement. Similarly, the row main effect (Methods) was tested and the results of the analysis of the simple effects for the rows at each column indicated that, for the low ability level, there is a statistically significant difference between the mean GPA of instructional television and conventional television group. Whereas, there

were no significant difference between ITV and conventional methods of instruction in GPA at average and high ability level students. Moreover, the data indicate that 25 percent of the grade point average accounted for the variations of methods of instructions and ability levels. The remaining variation accounted for by the variations of other variables.

TABLE 3: Summary of two-way ANOVA including test of simple effect concerning Academic Achievement of Students with Different Ability Levels

Dependent Variable: Grade Point Average (GPA)

Source	Type III Sum of Squares	df	Mean Square	F_{ob}	F_{CV}
Corrected Model	162.979	5	32.596	124.754	2.21*
Row (Method)	1.431	1	1.431	5.483	3.84*
Low	2.837	1	2.837	10.870	6.50***
Average	0.710	1	0.710	2.720	6.50
High	0.153	1	0.153	0.586	6.50
Colum (Level)	130.708	2	65.354	250.398	3.00*
ITV	2.837	2	1.419	5.437	4.01**
Conventional	37.859	2	18.93	72.529	4.01**
Method * Level	2.151	1.076	1.076	4.123	3.00*
Error	492.254	1884	0.261		
Total	5988.696	1890			
Corrected Total	655.233	1889			

a R Squared = .249 (Adjusted R Squared = .247
* p < 0.05 **P < 0.025 ***P < 0.017

According to the result significant difference exist between the three groups with respect to their mean GPA. The maximum mean GPA difference was between high ability level and low ability level.

As can be clearly seen from Figure 1, low achiever students, who studied their education with conventional instruction, out performed with academic achievement to their counterparts of low achievers of instructional television group. Using instructional television for low ability.level students would result low academic achievement than students studied their education with conventional instruction methods.

Even though, average ability level students mean GPA of the collected data favored for conventional methods of instruction the test of simple effect indicates that there was no significant difference between ITV and conventional methods of instruction on academic achievement.

Similarly, the simple effect test on high ability level was also showed that there is no significant difference on academic achievement between instructional television and conventional methods of instruction. However, the data favored for Instructional television group.

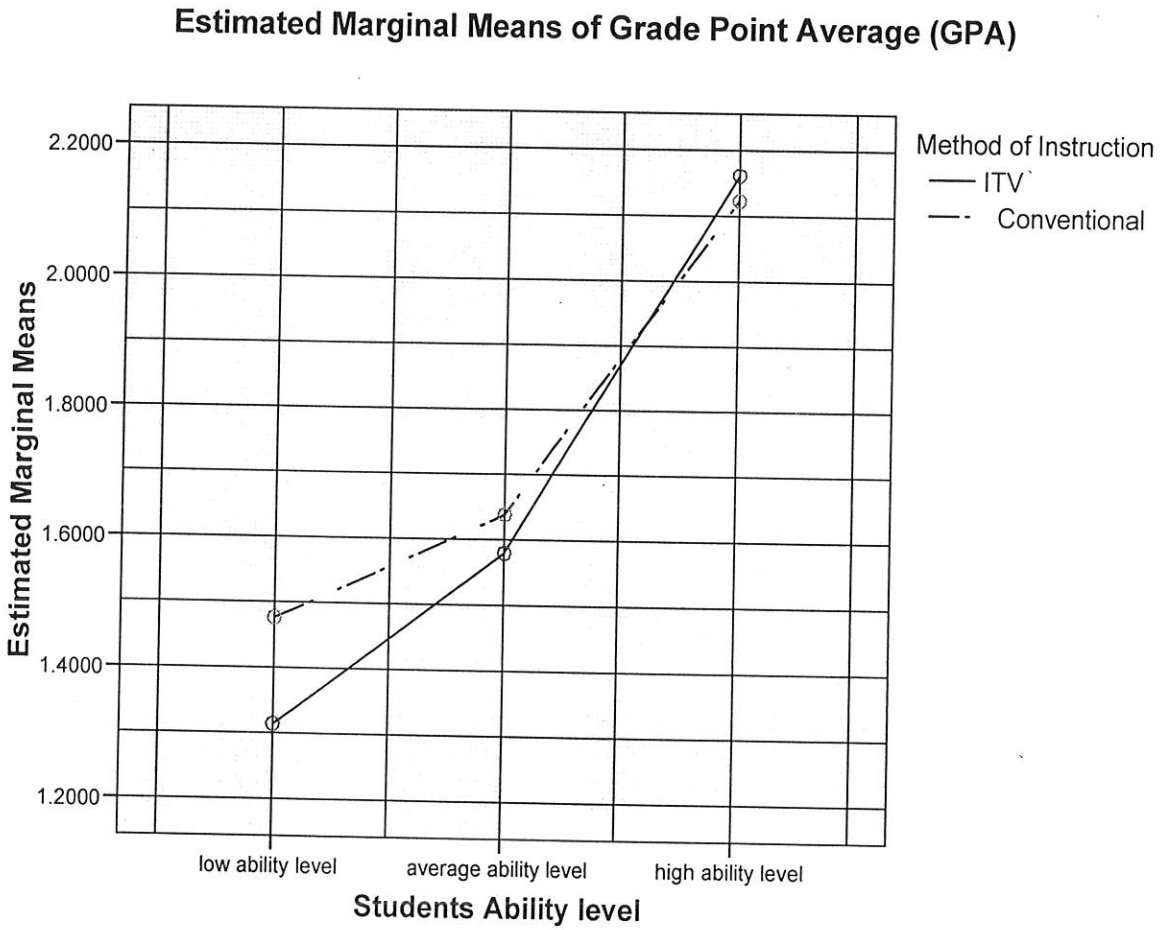

Figure 1 Interaction between ability and methods of instruction

Sex and Academic Achievement

The mean GPA of female students was 1.4991 with standard deviation 0.5034. And male students achieved GPA mean 1.7683 with standard deviation 0.6074. The total GPA mean was 1.6799 with standard deviation 0.5890.

The mean GPA of male participants of instructional television group does not much differ from their counterparts of conventional group when male subjects of the two groups were considered separately. The mean GPA values were 1.5636 and 1.7971 for female and male conventional participants, respectively; and 1.4669 and 1.7539 for female and male Instructional Television participants, respectively. (See the detailed from Table 4)

TABLE 4: Academic Achievement of Students by Gender and Methods of Teaching

Dependent Variable: Grade Point Average (CGPA)

Method of Instruction	Gender	Grade Point Average (GPA)			
		Count	Mean	Standard Deviation	Percent %
ITV	F	414	1.4669	.5137	21.9%
	M	846	1.7539	.6331	44.8%
	Total	1260	1.6596	.6114	66.7%
Conventional	F	207	1.5636	.4769	11.0%
	M	423	1.7971	.5521	22.4%
	Total	630	1.7204	.5395	33.3%
Total	F	621	1.4991	.5034	32.9%
	M	1269	1.7683	.6074	67.1%
	Total	1890	1.6799	.5890	100.0%

Sex difference was examined if it has to do a difference on academic achievement in instructional television group students and conventional instruction group students. Two independent variables were arranged in a

2x2 (Methods of instruction x Gender) factorial to see the effect of methods of instruction (Instructional Television and Conventional Instruction) and sex (female and male) participants on academic achievement. There is a noticeable variation in academic achievement between genders.

The result obtained after a treatment of two-way ANOVA has shown that there is significant difference in academic achievement between gender $F\ (1,\ 1886) = 75.951,\ p < 0.05$. There was also statistically significant difference $F\ (1,\ 1886) = 5.486,\ p < 0.05$ between instructional television and conventional instruction methods of teaching. There was no statistically significant difference in the interaction $F\ (1,\ 1886) = 0.806,\ p > 0.05$. This shows that in the population there is no interaction between methods of instruction and sex at 0.05 alpha levels.

TABLE 5: Summary of two-way ANOVA Concerning Sex and Academic Achievement

Dependent Variable: Grade Point Average (GPA)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	32.023(a)	3	10.674	32.304	.000
Intercept	4013.561	1	4013.561	12146.111	.000
method	1.813	1	1.813	5.486	.019
sex	25.097	1	25.097	75.951	.000
method * sex	.266	1	.266	.806	.369
Error	623.210	1886	.330		
Total	5988.696	1890			
Corrected Total	655.233	1889			

a R Squared = .049 (Adjusted R Squared = .047)
$p < 0.05$

Age of Student and Academic Achievement

Out of the total population of students, 1231 (65.1 %) attended grade 10 of ages 17 and below, 578 (30.6 %) 18-20 years and 81 (4.3 %) 21 years and above.

The mean GPA of those students whose age 17 years and below was1.6530 with standard deviation 0.6098 and 1.7570 with 0.5291 standard deviation for instructional television and conventional instruction groups respectively. The mean GPA of those students, whose age between 18 to 20 yeas were 1.6612 with 0.6133 standard deviation for ITV and 1.6757 with 0.5478 standard deviation for conventional instruction groups. And those students who attended grade 10 at the ages 21 and above got a mean GPA of 1.7652 with standard deviation 0.6301and 1.6405 with 0.5757 standard deviation for instructional television and conventional instruction groups respectively. The detailed descriptive (See below in Table 6 and Appendix E)

TABLE 6: Academic Achievement of Students by Age, Sex and Methods of Teaching

Method of Instruction	Gender	Students Age: below 18 Grade Point Average (GPA) Mean	below 18 Standard Deviation	18-20 Mean	18-20 Standard Deviation	21-above Mean	21-above Standard Deviation	Total Mean	Total Standard Deviation
ITV	F	1.4421	.5112	1.5319	.5153	1.5128	.5505	1.4669	.5137
	M	1.7622	.6281	1.7182	.6446	1.8564	.6390	1.7539	.6331
	Total	1.6530	.6098	1.6612	.6133	1.7652	.6301	1.6596	.6114
Conventional	F	1.5321	.4769	1.6267	.4676	1.5155	.5402	1.5636	.4769
	M	1.8766	.5173	1.6965	.5786	1.7060	.5955	1.7971	.5521
	Total	1.7570	.5291	1.6757	.5478	1.6405	.5757	1.7204	.5395
Total	F	1.4688	.5024	1.5704	.4973	1.5140	.5339	1.4991	.5034
	M	1.7954	.6000	1.7092	.6175	1.8010	.6223	1.7683	.6074
	Total	1.6834	.5890	1.6672	.5868	1.7160	.6086	1.6799	.5890

The variations of the student age were examined to see if there have any effects on academic achievement with the instructional television group subjects and conventional instruction group subjects. Two independent variables were arranged in a 2x3 (methods of instruction x students' age) to examine the effect of methods of teaching (Instructional Television and Conventional Instruction) on academic achievement of students aged below 18, 18-20 and 21 and above was computed.

Table 7 depicts that the interaction between methods (Instructional Television and Conventional Instruction) and age of students (below 18, 18-20 and 21 and above). The result obtained after a treatment of two-way ANOVA has shown that there is no statistically significant difference F (2, 1883) = 2.079, $p > 0.05$ in academic achievement between the interaction. This shows that there is no interaction between methods of instruction and age to effect on academic achievement.

TABLE 7: Summary of two-way ANOVA Regarding the Interaction between Methods of Instruction and Age

Dependent Variable: Grade Point Average (GPA)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.296(a)	5	.659	1.905	.090
Intercept	1643.276	1	1643.276	4748.819	.000
method	.001	1	.001	.002	.966
age	.491	2	.245	.709	.492
method * age	1.439	2	.719	2.079	.125
Error	651.937	1884	.346		
Total	5988.696	1890			
Corrected Total	655.233	1889			

a R Squared = .005 (Adjusted R Squared = .002)
$p < 0.05$

Academic Subjects Grade Point and Methods of Instruction

There is a considerable variation in achievement in academic subjects between methods of instructions (Instructional Television and Conventional Instruction). The mean grade point of subjects who studied their education with instructional television was 1.9833 for English, 1.6984 for Mathematics, 1.8135 for Physics, 1.8595 for Chemistry, 2.0071for Biology and 2.1127 for Civics. The mean grade point of subjects who attended their education with conventional instruction were 1.9349 for English, 1.8841 for Mathematics, 1.8429 for Physics, 2.0032 for Chemistry, 2.0762 for Biology and 2.0063 for Civics. The data favored to ITV for English and Civic Subjects.

TABLE 8: Grade Points of Academic Subjects by Instructional Television and Conventional Instruction Groups

		Grade Point			
Subject	Methods of Instruction	N	Mean	Std. Deviation	Std. Error Mean
English	Conventional	630	1.9349	.78776	.03138
	ITV	1260	1.9833	.81324	.02291
Math	Conventional	630	1.8841	.75920	.03025
	ITV	1260	1.6984	.94713	.02668
Physics	Conventional	630	1.8429	.68997	.02749
	ITV	1260	1.8135	.80268	.02261
Chemistry	Conventional	630	2.0032	.72212	.02877
	ITV	1260	1.8595	.84837	.02390
Biology	Conventional	630	2.0762	.61298	.02442
	ITV	1260	2.0071	.66868	.01884
Civic	Conventional	630	2.0063	.61509	.02451
	ITV	1260	2.1127	.70288	.01980

Besides the descriptive statistics an attempt was made to compare the effect of instructional television and conventional methods of instruction with academic achievement on different academic subjects. Table

9 depicts that the observed value of t for 1888 degree of freedom assuming equal variances and a two-tailed test at alpha = 0.05 is –1.233. Hence, it indicates that there is no statistically significant difference in English grade point between instructional television and conventional instruction.

However, the English subject mean grade point of instructional television group was grater than conventional instruction group the difference was not statistically significant.

There was also made independent t-test to see if there was a significant difference between the ITV and conventional instruction methods of teaching on Mathematics grade. The observed value of t for 1888 degree of freedom assuming equal variances a two-tailed test at alpha = 0.05 is 4.281. This shows that there is a statistically significant difference in mathematics grade point between the instructional television group students and conventional instruction group students. However, the equal variance assumption is violated. Therefore, by using unequal variance assumption a t-test was tested. The result shows that there is statistically significant difference between instructional television and conventional methods of instruction in Mathematics grade result. This shows that the conventional group students better performed on mathematics than the instructional television group students. (The detailed See from Table 9).

Since the assumption of equal variances not hold true for Physics subject a t-test tested using unequal assumption of variances. Thus, the observed value of t for 1439 degree of freedom assuming unequal variances and a two-tailed test at alpha 0.05 is 0.825. The t-test shows there is no statistically significant difference on physics grade point between the two groups of students.

For Chemistry subject the Levene's statistic test indicates that the equal assumption of variances is not holding. Therefore, a t-test is tested using assumption of unequal variances. The observed value of t for 1451 degree of freedom assuming unequal variances and a two tailed test at alpha 0.05 is 3.841. The t-test result shows there is statistically significant difference in chemistry subject grade point between instructional television and conventional instruction. This indicates that the conventional group students better performed on Chemistry than instructional television group students.

For Biology subject the observed value of t for 1888 degree of freedom assuming equal variances and a two-tailed test at alpha 0.05 are 2.174. This indicates that the conventional group students better performed in grade point on Biology subject than the instructional television group students.

For Civic subject observed value of t for 1417 degree of freedom assuming unequal variances and a two-tailed test at alpha = 0.05 is -3.376. Hence, it shows that there is statistically significant difference in Civic and Ethical Education results between instructional television group students and conventional instruction group students. This indicates that the instructional television group students better performed on Civic subject than conventional instruction group students.

Table 9 t-tests Result

The Effect of Instructional Television on Different Academic Subjects

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
English Grade	Equal variances assumed	.118	.732	-1.233	1888	.218	-.04841	.03927	-.12543	.02861
	Equal variances not assumed			-1.246	1294.340	.213	-.04841	.03886	-.12464	.02782
Maths Grade	Equal variances assumed	81.781	.000	4.281	1888	.000*	.18571	.04338	.10064	.27078
	Equal variances not assumed			4.604	1526.905	.000*	.18571	.04033	.10660	.26483
Physics Grade	Equal variances assumed	15.515	.000	.785	1888	.433	.02937	.03742	-.04403	.10276
	Equal variances not assumed			.825	1439.084	.410	.02937	.03559	-.04046	.09919
Chemistry Grade	Equal variances assumed	36.684	.000	3.641	1888	.000*	.14365	.03945	.06628	.22102
	Equal variances not assumed			3.841	1451.390	.000*	.14365	.03740	.07028	.21702
Biology Grade	Equal variances assumed	.937	.333	2.175	1888	.030*	.06905	.03175	.00678	.13131
	Equal variances not assumed			2.239	1359.691	.025*	.06905	.03084	.00854	.12955
Civic Grade	Equal variances assumed	33.449	.000	-3.229	1888	.001*	-.10635	.03293	-.17094	-.04176
	Equal variances not assumed			-3.376	1416.760	.001*	-.10635	.03151	-.16815	-.04455

*P<0.05

CHAPTER FIVE

DISSCUSION

5.1 Academic Achievement and Instructional Television

In terms of the comparison between the two modes of instruction, the findings of the study indicated that conventional instruction group students achieved significantly better learning outcomes in terms of grades point average with their learning compared with students in instructional television group students. The results of independent t-test is significant that the t value is 2.205 for 1407 degree of freedom assuming unequal variance and a two tailed test at 0.05. This indicates that conventional group students better performed with academic achievement than instructioal television group students.

The finding of the study goes along with Egan, et al. research finding that distant learners rated the effectiveness of conventional delivery systems higher than telecourse instructional systems. It is contrary to a predominance of studies which found that telecourse produced equal or superior achievement. According to Egan, et al., (1992:53), the strength of conventional classroom instruction was attributed to several factors which include instructional 'intimacy' associated with face-to-face aspect of the conventional delivery system. Specifically, such factors as accessibility to the instructor, immediacy of feedback, and the ability of the instructor to monitor student behavior (verbal and non-verbal) are important factors during session interactions. Perhaps sufficent amont of interaction time maintained between teacher and students in conventional instruction classes

strengthened learning when compared to the instructional television group where the teacher and students interaction is very limited.

The literature supports the theory that interactions among students and between the students and teachers enhance the students' opportunity for learning to think critically in the conventional classrooms (Brookfield, 1987).

However, the result of the present study is contrary to the report of Chu and Schramm. They said that much of the literature on television instruction shows that television instruction produces equal or superior cognitive outcomes compared with conventional instructional methods (Chu and schramm, 1975). Zigerell (1984) has agreed with Chu and Schramm that there was no significant difference in cognitive outcomes between instructional television and conventional classroom students taking equivalent courses. Where differences were observed, these were in favor of television based instruction. Similar findings were also reported by Moore and Thompson (1990) who found that instructional television in higher education, military and business was as effective as conventional classroom instruction.

5.2 The Effect of Ability Levels on Students Academic Achievement

The difference in academic achievement between the three ability levels was tested by two-way ANOVA. The main effect (ability levels) in the two-way ANOVA showed that there is significant difference in academic achievement among the three ability levels.

The interaction effect between ability levels and methods of instruction in the two way ANOVA also showed significant difference in academic achievement. Low achievers of the conventional instruction group better performed in academic achievement than their counterparts in the instructional television group. There is no difference in academic achievement between the instructional television and conventional methods of instruction for high and average achiever students. The academic performance between the low achiever and high achiever students got wider in the instructional television group than the conventional instruction group.

There are literatures which support the present findings. Cross (1988); Wlodknowski, (1991); and Knox, (1989) found that students with poor educational background frequently lack interest in learning or lack confidence in their ability to learn.

On the other hand, high learners are more likely able to integrate the vision and verbal representations offered by multimedia presentation. The finding of the study accorded with Schramm (1977) findings that ingeneral abler students, other things being equal, tend to learn more from any medium than less able students.

5.3 Sex on Academic Achievement

The two-way ANOVA test results administered to determine whether students' academic achievement affected with the interaction between sex and methods of instruction. The main effect (sexes) in the two way ANOVA showed that there is significant difference in academic achievement between male and female. Males were outranked with academic achievement than females in their respective groups.

The finding of the study is differente form the Clifford, et al. (1995) findings that there was no gender gap, girls learned and were interested in instructional television at the same rates as boys.

5.4 Age on Academic Achievement

Age was categorized in to three groups. And the differnce in academic ahievement among the mean GPA of the three age goups was tested by a two-way ANOVA. The main effect of age categories in the two-way ANOVA showed that there is no significant difference in academic achievement among the three categories of age.

In some studies older children score better on achievement tests than younger children (e.g. Van Evra, 1998) suggesting that as childdren aged, they have more general background knowledge and information processing skills allowing for better attention, recall, and comprehension. Other studies, clifford et al. (1995) found that older and younger children learned at the same rate.

5.5 The Effect of Instructional Television on Academic Subjects

Independent t-tesrs were perforemed for each academic subjects, comparing the students' grade point between conventional instruction and instructional television groups.

The collected data was favored for the instructional television group. However, the result of Independt t-test showed that there was no significant difference in mean grade point between instructional television and conventional methods of instruction with English subject. This shows that

instructional television methods of teaching is as effective as conventional methods of teaching in English subject.

The independent t-test result also showed that there is statistically significant difference in Civic grade point between instructional television methods of teaching and conventional methods of instuction. This shows that students from the instructional television group better performed in Civic and Ethical Education grade point than conventional instruction group students.

The result of Independent t-test showed that there is no significant difference in physics subject between instructional television and conventional instruction group.

The t-test also showed that there is statistically significant difference in Chemistry and Biology grade points between instructional television and conventional instruction groups. The conventional instruction group better pervormed in grade point on Chemistry and Biology subjects than instructional television group students.

The next chapter deals with summary, conclusion and recommendation of the study.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

The study investigated if there is a significant difference in academic achievement between Instructional Television (ITV) and Conventional methods of Instruction. Besides, an attempt was made to find out the effect of certain factors on academic performance of the two groups of students.

Grade point average and grades of different academic subjects were used to compare the sample subjects' academic achievement and to identify the academic subjects better performed with Instructional Television.

The major methods of analysis employed were the t-test, and two-way ANOVA.

A t-test was conducted to examine the contribution of instructional television on students' academic achievement. The t-test has shown that there is a statistically significant difference between the two methods of instruction. Hence, the conventional group students outperformed in academic achievement to Instructional Television (ITV) group students.

The result of the present study supports the research outcomes that reported statistically significant difference in academic achievement between Instructional television and Conventional methods of Instruction. The mean average score in academic achievement favored for conventional instruction group.

Analysis of two-way ANOVA to assess the effect of ability levels and methods of instruction on academic achievement has shown that these variables cause difference.

The result obtained after a treatment of two-way ANOVA has shown that there is a statistically significant difference on academic achievement among ability levels as a whole. Results regarding the interaction between ability level and methods of instruction indicate that low achiever students benefited significantly from the conventional instruction than instructional television. Academic achievement of high and average achiever students will not differ due to using instructional television or conventional methods of instruction for delivering instruction.

Two-way ANOVA was employed to test the difference in academic achievement between sex and methods of instruction. The test result has shown that there is statistically significant difference between instructional television and conventional instruction methods of teaching.

The conventional instruction group achieved better in academic achievement than instructional television group. In gender wise males were more benefited than female students from both methods of instruction. Thus, teaching with ITV did not alter or improve the academic achievement gap between male and female. There is no significant difference in academic achievement between the interaction of sex and methods of instruction at 0.05 levels.

The interaction between students' age and methods of instruction in academic achievement was not significant. Hence, the mean GPA of

students' academic achievement does not differ among the categorized students' age groups.

6.2 Conclusions

Based on the results of this study the following conclusions are presented.

1. There is statistically significant difference in students' academic achievement between instructional television group and conventional instruction group as a whole.
2. The differences in ability levels cause significant difference in academic achievement. The low achiever students from the conventional instruction group exceed in grade point average to their counterparts in the instructional television group. On the other hand the high and average achiever student academic achievement will not differ due to using instructional television or conventional methods of instruction. Low achiever students are better benefited from conventional methods of Instruction than instructional television. This in turn would increase the academic performance gap between high and low achievers students of the instructional television group.
3. There is significant difference in academic performance between female and male students. Male students outperformed in grade point average than female students in their respective group.
4. Age has no effect on academic achievement.
5. The effect of instructional television based education has mixed effect on different academic subjects when compared with conventional methods of instruction. Instructional television group students outranked in Civic and Ethical Education than conventional

instruction group students. Conventional instruction group students outperformed in Chemistry, Mathematics and Biology grade points than instructional television group students. There is no grade point difference in English and physics between instructional television and conventional methods of teaching. An instructional television method of teaching is as effective as conventional methods of instruction in English and physics performance.

6.3 Recommendation

Based on the findings in this research, the following recommendations are suggested.

1. Results in this study indicate that conventional instruction students outranked the instructional television students in academic achievement. Therefore, the Ministry of Education (MoE) and Educational Mass Media Agency (EMA) would take the necessary measures that might help the instructional television students get more out of their educational experience. This may include:
   a. Teaching in this new medium requires role changes and new teaching strategies. Such as the classroom teacher supplements the presentation of the television teacher and based on frequent follow up and evaluation support students. Hence, preparing and providing staff development programs to teachers and administrators based on the use and implementation of instructional television may increase the academic performance of the instructional television group students.
   b. As with the classroom teacher, the instructional television teacher should direct his lesson to a simple level of difficulty, presumably

that of the average learner, so that adjustments for the low achieving and the high achieving students should be made before or after the presentation.

2. To improve students performances in school and to understand better the possible effectiveness of Instructional Television: more studies need to be done in order to determine how to effectively use the technology in the classroom in order to improve student performance.

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APPENDICES

t-test

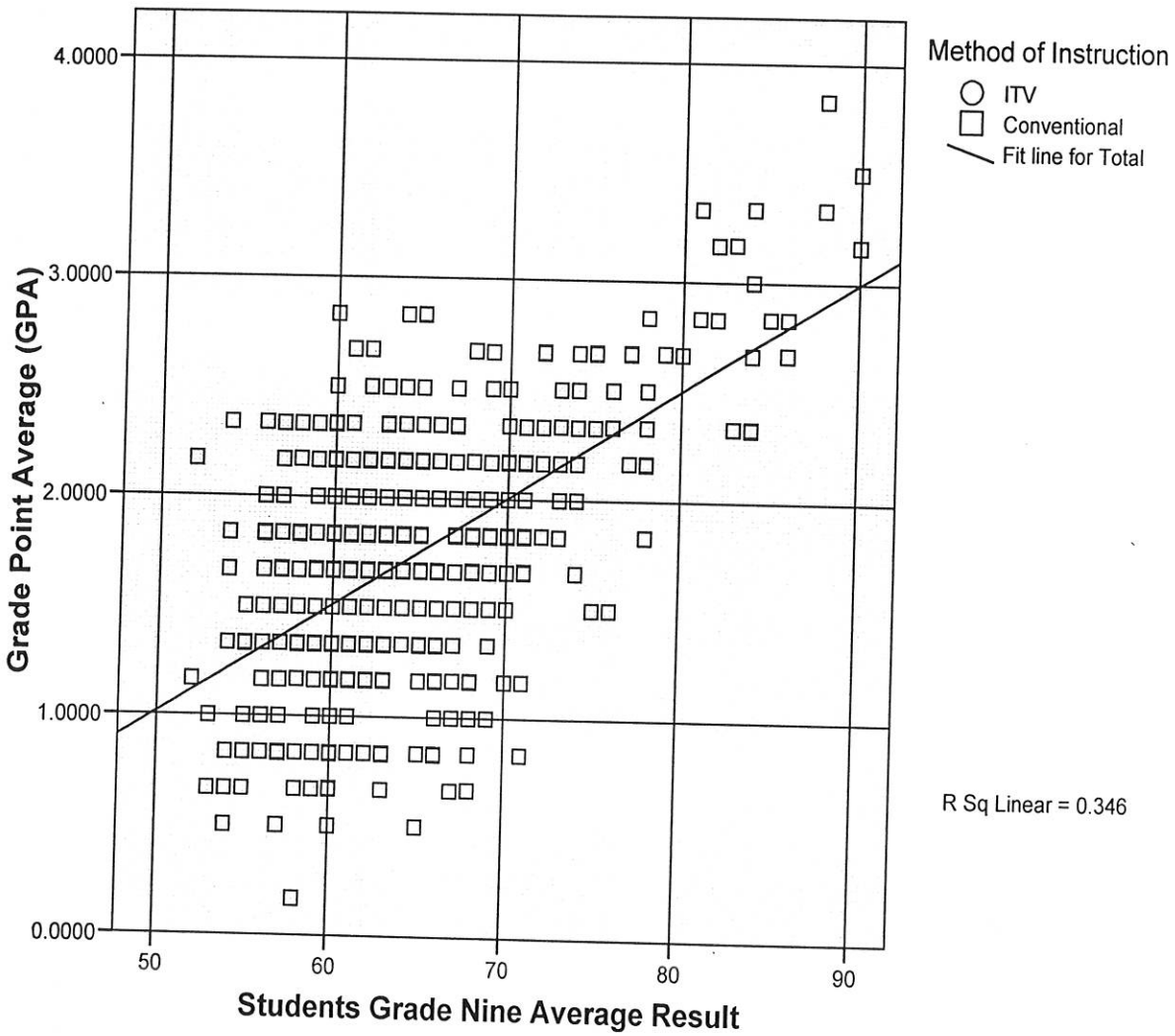
Group Statistics

	Method of Instruction	N	Mean	Std. Deviation	Std. Error Mean
Grade Point Average (GPA)	Conventional	630	1.7204	.53946	.02149
	ITV	1260	1.6596	.61141	.01722

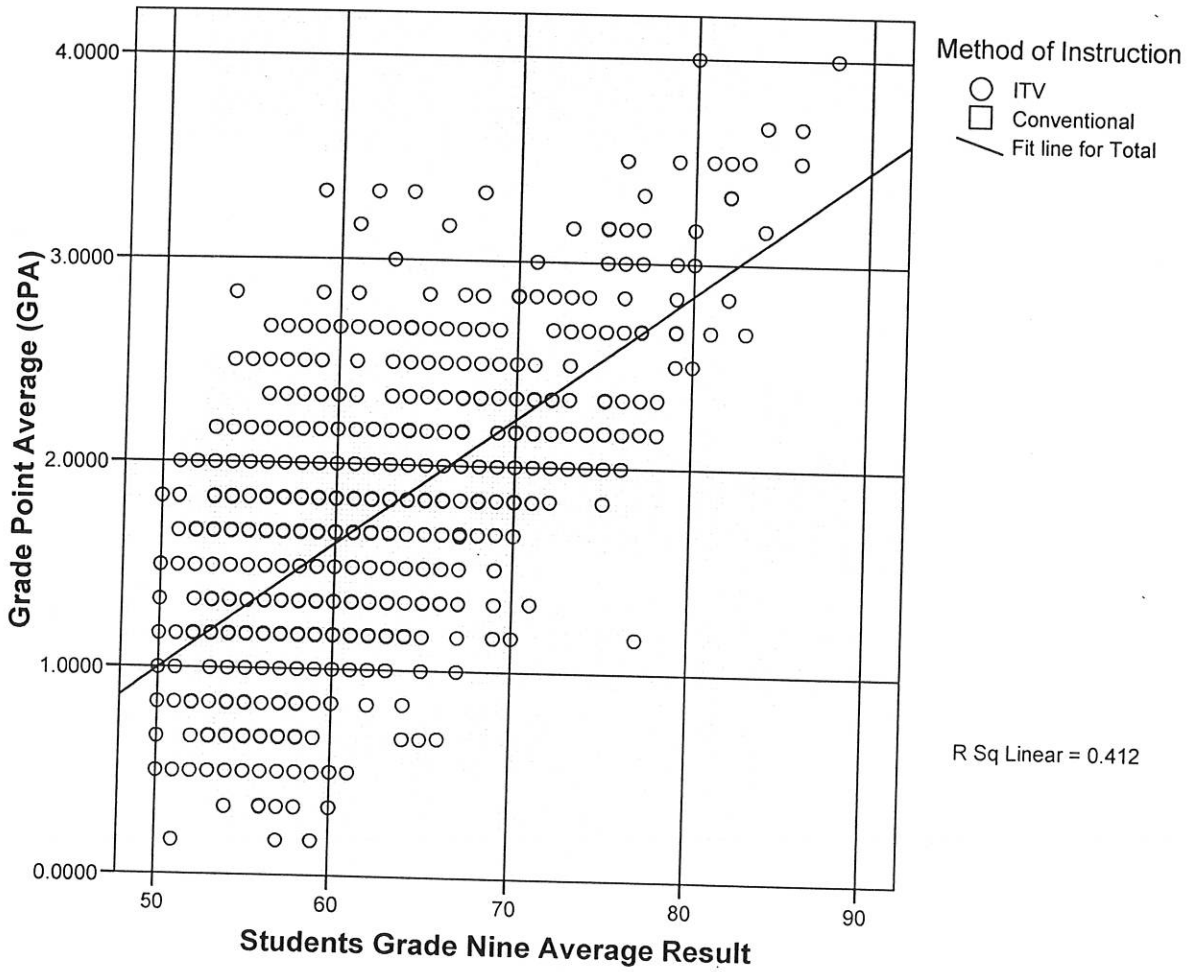
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Grade Point Average (GPA	Equal variances assumed	9.406	.002	2.116	1888	.035	.06075	.02871	.00444	.11706
	Equal variances not assumed			2.205	1406.559	.028	.06075	.02754	.00672	.11477

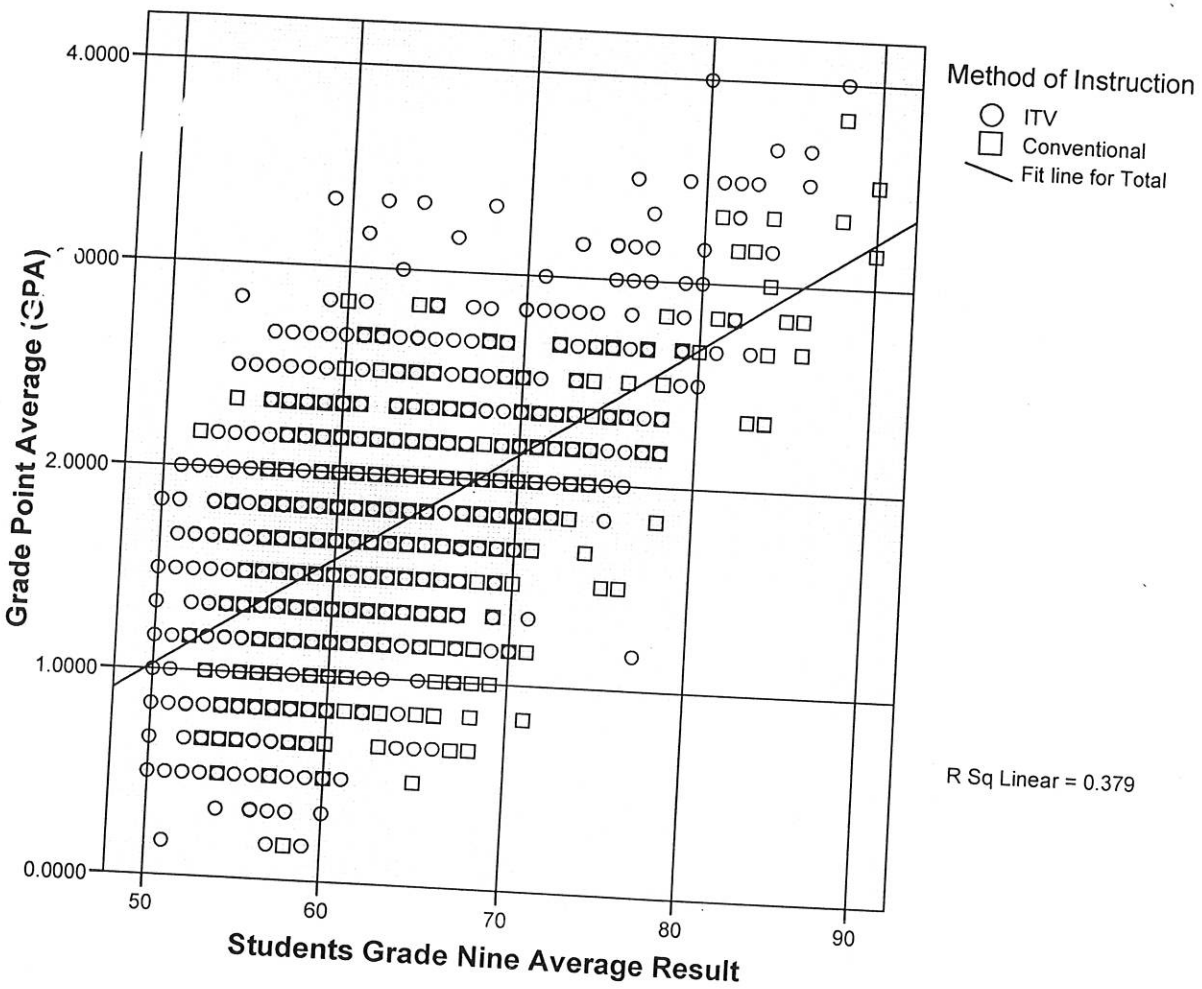
Appendix B


Method of Instruction
ITV
Conventional
Fit line for Total
R Sq Linear = 0.346
Grade Point Average (GPA)
4.0000
3.0000
2.0000
1.0000
0.0000
50
60
70
80
90
Students Grade Nine Average Result

Appendix C


Method of Instruction
ITV
Conventional
Fit line for Total
R Sq Linear = 0.412
Grade Point Average (GPA)
4.0000
3.0000
2.0000
1.0000
0.0000
50
60
70
80
90
Students Grade Nine Average Result

Appendix D


Method of Instruction
ITV
Conventional
Fit line for Total
R Sq Linear = 0.379
Grade Point Average (GPA)
4.0000
2.0000
1.0000
0.0000
50
60
70
80
90
Students Grade Nine Average Result

Appendix E

			Students Age															
			below 18				18-20				21-above				Total			
			Grade Point Average (GPA)				Grade Point Average (GPA)				Grade Point Average (GPA)				Grade Point Average (GPA)			
			Count	Mean	Standard Deviation	Table N %	Count	Mean	Standard Deviation	Table N %	Count	Mean	Standard Deviation	Table N %	Count	Mean	Standard Deviation	Table N %
Method c ITV Instructic	Gende	F	297	1.4421	.5112	15.7%	104	1.5319	.5153	5.5%	13	1.5128	.5505	.7%	414	1.4669	.5137	21.9%
		M	574	1.7622	.6281	30.4%	236	1.7182	.6446	12.5%	36	1.8564	.6390	1.9%	846	1.7539	.6331	44.8%
		Total	871	1.6530	.6098	46.1%	340	1.6612	.6133	18.0%	49	1.7652	.6301	2.6%	1260	1.6596	.6114	66.7%
Conventior	Gende	F	125	1.5321	.4769	6.6%	71	1.6267	.4676	3.8%	11	1.5155	.5402	.6%	207	1.5636	.4769	11.0%
		M	235	1.8766	.5173	12.4%	167	1.6965	.5786	8.8%	21	1.7060	.5955	1.1%	423	1.7971	.5521	22.4%
		Total	360	1.7570	.5291	19.0%	238	1.6757	.5478	12.6%	32	1.6405	.5757	1.7%	630	1.7204	.5395	33.3%
Total	Gende	F	422	1.4688	.5024	22.3%	175	1.5704	.4973	9.3%	24	1.5140	.5339	1.3%	621	1.4991	.5034	32.9%
		M	809	1.7954	.6000	42.8%	403	1.7092	.6175	21.3%	57	1.8010	.6223	3.0%	1269	1.7683	.6074	67.1%
		Total	1231	1.6834	.5890	65.1%	578	1.6672	.5868	30.6%	81	1.7160	.6086	4.3%	1890	1.6799	.5890	100.0%

DECLARATION

I, the undersigned, declare that this thesis is my original work; it has not been presented in other University, College or Institutions, seeking for similar degree or other purposes. All sources of the materials used in the thesis have been duly acknowledged.

Name Tesfaye Lepeta

Signature

Place Addis Ababa University; Addis Ababa

Date 11/06/2009

This thesis has been submitted for examination with my approval as a University advisor.

Name Ayele Mosisa

Signature Ayele Mosisa

Date June 11, 2009