ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

A STUDY ON THE EXTENT TO WHICH TEACHER TRAINING INSTITUTE INSTRUCTORS IN THE AMAHARA REGION EFFECTIVELY EMPLOY THE DIDACTIC ELEMENTS OF A LESSON

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ABSTRACT

The purpose of this study was to investigate the extent to which TTI instructors in the Amhara region effectively employ the didactic elements of a lesson. Accordingly, attempts were made to identify the techniques of each didactic element instructors often employ. An attempt was also made to see whether or not instructors' employment of the didactic elements were related to their teachig experience and qualification.

Data regarding instructors' employment of the didactic elements were obtained from all instructors of Dessie TTI. The data gathering instrument ued was systematic observation. The data secured through consecutive observations were analysed using percentage, spearman's rank difference and point bi-serial correlation coefficients.

The findings of the study showed that instructional sets, i.e. set induction and closure were least used by instructors. The findings also indicated that instructors were poor in their indirect influences and that their classrooms were instructor dominated. It was thus concluded that instrutors under study were not giving due emphasis to the importance of including all of the didactic elements in their lessons. Further more, it was found out that teaching experience had significant direct relationship with instructors' teaching behaviors under treatment.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The old notion of teaching which primarily regarded the teacher as transmitter of knowledge has now given way to modern conceptions. In teaching where the teacher feels that his important task is to cram information in the minds of his learners, higher levels of learning such as reasoning, interpretation and application are deemphasized. Thus, according to Sarason et.al. (1986:76), the teacher is not (or should not be) merely a communicator of knowledge unconcerned with the means where by this knowledge is acquired and the uses to which it is put. They conceived the teacher as a kind of psychological diagnostician and tactician vitally concerned with how children acquire and use knowledge and skill. Besides transmission of knowledge, stimulation, encouragement and guidance of learning are now considered as basic tasks of the teacher. One of the general trends of change in the role of the teacher, hence, is a shift in emphasis from transmission of knowledge to the organization of pupils' learning (Goble and Porter 1977:13).

Emphasis in the organization of pupils' learning means that the teacher's main task is creating conditions conducive for pupils' own learning. In this sense teaching has more of a facilitating role. Such type of teaching and learning in which the learner's active involvement is given a primary focus necessitates a friendly, interactive and cooperative relationship between the teacher and his pupils. Regarding this, Goble and Porter (1977:118)wrote:

> The teacher is no longer able to shelter behind his superior knowledge or to step on a raised desk and look down with authority upon the bent heads of children.Democratization is not only a process which affects education systems:it enters the classroom and

intimate relationships between the teacher and the taught.

The conception of teaching as facilitation of pupils' own learning is ofcourse, more than the issue of a democratic teaching-learning situation. A substanial number of studies have found that indirect teaching has resulted in more pupils' learning and better attitude toward learning (Perrott 1987:2).

The competencies required of the teacher to effectively perform his teaching tasks in accordance with this modern conception necessitate the use of a wide variety of methods and skills with appropriate knowledge of their application. This again calls for inclusion of the required competencies or skills in teacher training programs and their appropriate application by teacher trainers (instructors) themselves. Instructors' mastery and appropriate use of the methods and skills that are considered to be effective and that are expected to be used by prospective teachers in their future career is in particular crucial. It is true that trainees model after their instructors. Accordingly, trainees learn more from the ways their instructors teach in the classroom. As the well known saying goes: "Teachers teach the way they were taught."

In line with the above idea, Willcox (1969:5) wrote: "Many observers of the education scene in various countries agree that new teachers tend to imitate their own past instructors than to do what they were taught to do through professional education courses." Farrant (1981:5) also told that many teachers in school taught their children just in ways they learned in college. Studies of pre-service teachers suggest that unless formal training modifies pre-existent images of teachers and teaching, future teachers will practice what their teachers did (Rowell 1995:4). All these scholars stress the point that future teachers must look for appropriate models. The trainee, therefore, must be helped not only in the educational basis of teaching (human knowledge, child

development and aims of education), but must also receive training in how to exercise the essential skills of learning and teaching (Farrant 1981:4).

To establish skills of higher yield, researchers have conducted studies by determining the effects of various types of teaching behavior upon pupils (Smith 1971:2). Accordingly, as Mcdonald and Allen (in Smith 1971:2) observed, a major break through in the training of teachers occurred when teaching behavior was conceived to be a complex of skills that could be identified and practiced systematically under specified conditions. As a result of such studies teaching behaviors that have promising relationships to desirable learning outcomes are identified. Borich (1988:7) identified five key behaviors that have strong research support. These include clarity, variety, task-orientation, student engagement (in the teaching-learning process) and success rates. According to him, these key behaviors appear to be consistently effective across all or most teaching contexts and found to represent the most important behaviors that are central to modern definition of effective teaching. Gagne and Briggs (in Borich 1988:122) also suggested a sequence of seven instructional activities that result in desirable learning outcomes.

a) Getting attention
b) Informing the learner of the objective
c) Stimulating recall of pre-requisite learning
d) Presenting the stimulus
e) Eliciting the desired behavior
f) Providing feedback
g) Assessing the behavior

Similarly, Perrott (1987:2) has identified five lesson presentation skills which are basic for effective teaching. These include set induction, closure, Varying the stimulus, clarity of explanation and use of examples.

Robinson (1981:51), Callahan and Clark (1988:109), Curzon (1990:243), Kasambira (1993:23), Cole and Chan (1994:95), Moore (1995:87) and many others categorize these lesson presentation skills into three as Set induction (introduction), lesson development (presentation), and Closure (conclusion). All of them stress the point that skillful implementation of these components or didactic elements of a lesson is the basis for effective teaching.

In line with this, Cole and Chan (1994:99) wrote: "Findings of classroom research have provided support for the effectiveness of including each of these three phases in most lessons." Callahan and Clark (1988:110) also told: "It is as important to have a clear cut conclusion as it is to have a strong introduction." Other research findings indicated that pre-instructional set has an influence upon the outcome of learning. A study conducted by Schuck (1981:23) revealed that students taught by teachers trained in the deliberate use of set induction in their instructional strategies had achieved significantly higher than those taught by teachers not so trained. He recommended the inclusion of this teaching skill in teacher education programs.

With regard to what has been seen so far, the extent to which instructors of our TTIs effectively employ these lesson presentation skills can be determined only through empirical studies.

1.2 Statement of the Problem

The importance of pupils' active involvement in the teaching-learning process stimulated by the teacher's facilitation tasks and the need of teachers' mastery and appropriate employment of the basic lesson presentation skills that have close relationships to desirable learning outcomes have been discussed earlier. Nonetheless, as Rowell (1995:3) stated many observers in the school of developing countries have noted the prevalence of didactic classroom

practice that supports only over passive learners that leads to rote learning and stifling of critical thinking. Citing King (1989), he noted that the character of classroom life is less determined by material shortages than by the emergence of a teaching and learning tradition that is less supportive of student participation and inquiry.

Willcox (1969:3) has also similar view on the classroom practice of teachers and its effect on learning.

> Teachers too often feel that their most important task is to cram factual information into the minds of youngsters.They frequently perform this task resolutely, checking often to see if students have memorized essential facts successfully. In this kind of teaching, specific facts become so numerous that they tend to submerge the youngsters, to the neglect of reasoning, interpretation, and of application.

The above observations seem to be true of teacher educators too. Willcox (1969:5), Carter (in Schott 1989:55) and others told that teacher educators have problems in the development of teaching skills. They stressed the point that prospective teachers need to have appropriate models of effective teaching.

Some studies have been conducted on our primary teacher training programs particularly during the 1980's and 1990's (the detail is presented in chapter two). But most of the studies were concerned with evaluating program effectiveness and syllabus and text book evaluation. Two studies, that of Getachew (1992) and Biadglgn (1995) dealt with the teaching skills of TTI instructors. However, these studies examined either specific aspects of the teaching skills or instructors of specific courses. Accordingly, the first dealt with the teaching skills of pedagogical course instructors while the second examined the questioning skill of instructors. It is essential, therefore, to investigate the

overall lesson presentation skills of TTI instructors so as to contribute to the improvement of the preparation of primary education teachers.

On the other hand, as indicated earlier, the lesson presentation model advocated by most authorities consists of three structural components set induction, lesson development and closure. But some other authorities such as Gagne and Briggs (in Borich 1988), and Perrott (1987) split the didactic elements of a lesson into 7 and 5 components respectively. Because of this an eclectic approach was followed in this study. The main elements examined as a result of the eclectic approach include the following.

a) Set induction
b) Clarity of explanation
c) Varying the Stimulus
d) Student engagement in the teaching-learning process and the use of student ideas; and,
f) Closure.

In addition to the above didactic elements, questioning and use of examples are treated as aids or techniques in clarifying explanation and the use of student ideas. Clarity of explanation, student engagement and the use of student ideas and varying the stimulus are components of lesson development.

On the basis of the above framework, the following basic questions were phrased as guides of the research undertaking.

1. Which techniques of set induction are often employed by TTI instructors?
2. Which techniques do TTI instructors often use to clarify their explanations?
3. What are the stimulus variation techniques often used by TTI instructors?

4. What are the techniques frequently employed by TTI instructors to enhance student engagement in the teaching-learning process?
5. Which lesson closure techniques are often used by TTI instructors?
6. Do instructor's qualification and teaching experience have any relationship with their employment of the didactic elements of a lesson?

1.3 Significance of the Study

Since the ultimate purpose of the study is to investigate the extent to which TTI instructors effectively employ the didactic elements of a lesson, the following contributions are expected of the result.

- It can provide information regarding the specific areas of lesson presentation skills on which TTI instructors may need further in-service training.
- By identifying the aspects of didactic elements that are not effectively employed by TTI instructors, it can give some hint as to which teaching skills to emphasize in the training programs of instructors.
- It can also help instructors themselves to reflect on their own classroom practices and make the necessary effort to improve their lesson presentation skills.

1.4 Delimitation of the Study

There are about a dozen of TTIs in the country at this time. Due to educational decentralization and language policy of the country, nation-nationality languages are currently introduced as media of instruction in primary teacher training programs. Hence, because of the researcher's familiarity with the medium of instruction used by the TTIs in the Amhara region, the study is confined to TTI instructors in the region.

On the other hand, teaching is a very complex process which encompasses a number of activities. Thus, since all teaching-learning behaviors can not be exhaustively studied in a single research project, the study is limited to the observation and analysis of specific instructor behaviors, i.e. their employment of the didactic elements of a lesson. The findings and the conclusion made are, therefore, concerned only with the lesson presentation skills of TTI instructors in the Amhara region.

1.5 Limitation of the Study

Lack of previous research on the overall lesson presentation skills of teachers or instructors' employment of the didactic elements of a lesson was one of the major problems faced in the course of this research undertaking. The researcher thus had to develop the instrument by integrating items from different models and research works. Moreover, an expert judge and a pilot-study had to be employed and conducted to test its validity and reliability.

Another problem encountered in conducting this research was delay in the final approval of the proposal and release of fund. Because of this, it was not possible to make the final observation as scheduled in the proposal.

Finally, the researcher couldn't make the study on both TTIs in the region, i.e. Debre Berhan and Dessie TTIs as planned in the proposal. This was due to a sudden change of program in Debre Berhan TTI. The usual pre-service training program was not provided in Debre Berhan TTI in the 1990 E.C. academic year. Instead, short in-service training programs (4-rounds each with a 2-months duration) were scheduled for English, Maths and Science teachers of the 2nd cycle primary education. Because of this, the study was conducted only on Dessie TTI instructors. Some basic facts about Dessie TTI are given in appendix V.

Despite all these challenges and problems, the writer has made the utmost effort to realize the objectives of the research.

1.6 Definition of Key Terms

The following basic terms have meaning in the context of this paper as defined below.

Didactic Elements - are basic lesson presentation skills that have specific functions in attaining the objectives of a lesson when employed by an instructor. Different authorities designate didactic elements differently. They are termed as elements of instruction by Barnas (in Barrel 1985:21), structural components by Curzon (1990:24), and Phases by Cole and Chan (1994:95).

Effectiveness - refers to an appropriate use of the didactic elements of a lesson according to specifications supplied by authorities. Mere imparting of knowledge or transmission of information does not characterize effective teaching. (See chapter two for the specifications of authorities).

Instructional Sets - are instructional activities designed to provide an overview for what is to happen or has happened at the start or at the end of lessons so as to establish student involvement.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

In this part of the paper, relevant research and literature related with the problem under treatment is reviewed. The issues reviewed include education of teachers, teaching effectiveness and didactic elements of a lesson. A brief account of teacher education in Ethiopia is also given under the title education of teachers.

2.1 Education of Teachers

Teacher education's uneasy relationship with university and school system is considered by many authorities as the World's most prevalent issue in teacher education. According to Leavitt (1991:324), the crux of this universal problem is that education must relate to two entities with radically different mind - sets.

- The university pressure for more discipline-oriented subject matter.
- The school system exerts pressure for practice-oriented courses and practical experience that more directly prepare teachers for classroom teaching.

He further clarified the point by stating that universally, there is a tension between the university ideal of knowledge for the sake of pure scholarship and public school's interest in knowledge for practical purposes. The gap between what teacher education programs provide for their student teachers and the demands of school realities is thus often mentioned as basic problem. In line with this, Goldhammer (1981:25) wrote:

> It is a sad thing that most teachers, after two or three years in the field, claim that their teacher education programs did little to help them face the realities of teaching.
>
> Sarason et.al (1986:120) also stated: What is so distressing to us is not only that the theory and practice of training frequently bear little attention to each other, but that neither bears a strong relationship to the reality of the everyday task of the teacher.
>
> Similarly,Smith (1970:69-70) had to say: Almost all teachers are prepared in programs that provide little or not training in teaching skills.... The trainee studies theories that lead no where, then does his teaching with little understanding of the situation he meets.

Many educators, therefore, recommend that teacher education should be defined only in terms of what teachers are prepared to accomplish. Goldhammer (1981:25) and Schott (1989:13) are some of the advocates of this idea. According to them, the responsibility of teacher education institutes is to provide a clear idea of what teachers can accomplish and provide the means to accomplish it.

The other side of the issue is that since teachers' success is judged by how much their students have learned, some claim that the design of teacher education programs must be rooted in the research on teacher effectiveness. From research studies on teaching effectiveness, it is recognized that teachers can be trained to exhibit teaching behaviors that have close relationship with desirable learning outcomes such as accepting student ideas, increasing pupil imitation, using higher level of questioning techniques, etc. Further more, such studies indicated that training procedures which focused on denotable, specific behaviors were more effective than traditional methods courses in changing teacher behavior (Rosenshine and Furst 1971:38).

Accordingly, it is argued that the focus of study in a training program need to be the trainee's own behaviors instead of content of courses. In terms of Smith (1970:71) since to train some one means to guide him to acquire a certain skill, it is the trainee's performance that is to be observed, analyzed and modified. Furthermore, the student in the process of becoming a teacher should be made acutely aware of how he is learning, that is, to utilize himself as a source of understanding of the nature of the learning process (Sarason, et.al 1986:18). They further stated that one of the major reasons so many teachers are dissatisfied with themselves in their work is that their training did not illuminate the nature of their learning process and how this relates to and affects the learning process of their pupils.

Due to these reasons, the Study of Teaching Approach or the Reflective Teacher Education Model is advocated by Smith (1970:71), Olsen (1976:159), Sarason, et.al (1986:18), Pollard (in Melese 1997:4), and by many others. The approach is based on the idea that while much is known about teaching, this knowledge gains practical relevance for the learning teacher only through his close examination of real teaching. In this approach, the major task of the educator is to promote critical enquiry. Hence, each student teacher is encouraged to observe, analyze, assess and modify his performance. The approach draws support from the view that teaching is basically an intellectual process consisting of doing one's best to solve the problem of how to get students to learn that which is decided they should (Olsen 1976:159).

An other important issue with regard to teacher education is the quality of teacher educators. As indicated earlier in the first chapter of the paper, new teachers tend to imitate their own teachers than to do what they were taught to do through professional courses. Prospective teachers thus need to have appropriate models of effective teaching. Nonetheless, many researchers have observed that most teacher educators are inadequate to serve this purpose.

Carter (in Schott 1989:55) identified the following problems in the transmission of teaching skills.

- Teacher educators can not teach the skills they have.
- They do not have the skills they are attempting to transmit.
- They lack time to complete the process (they can only teach awareness).
- The belief that 10% of teaching is technical skill which can be taught, while 90% of teaching is an art which is not capable of being taught.

To alleviate the problem, Watch (in Schott 1989:55) suggested the following minimum requirements for teacher educators.

. An education Doctrate Degree.
. A minimum of 3 years teaching experience at either elementary or secondary school level; and,
. An acceptable score on a standardized comprehensive examination of pedagogical knowledge.

He further contended:

> Initial certification would be based on these qualifications and would assure that teacher educators have the appropriate preparation, professional experience, and pedagogical knowledge to prepare school teachers.

What Watch suggested regarding the qualifications and professional experience of teacher educators is acceptable because experience, be it total teaching years, experience in specific curriculum or grade level, or teaching practices in college or university enables teachers to integrate new knowledge and skills with current practice.

Teacher Education in Ethiopia

Teacher training institutes were developed in 1944, first in Addis Ababa and then at Harar, and teacher training was an occupational system in selected

secondary schools (Hudlund 1975:72). There were varying standards of entry from grades 7-10 with varying lengths of training, usually from 1 year to 4 years.

It was in 1964 that the standard entry was raised to a minimum of grade 10 plus 2 years teacher training, or 1 year if the candidates had already completed grades 11 or 12. At about the same time, the secondary school systems were raised to the status of TTIs (Hudlund 1975:73). The first uniform teacher training curriculum was put into operation in 1965 which stated that 50% of the program would be devoted to academic training and the remaining 50% to professional training (Ibid).

Although a number of measures were taken to improve and raise the status of teacher education since then, many scholars who conducted research on the Ethiopian teacher education contended that teacher preparation was inadequate . In line with this, Willcox (1969:5) Wrote:

> Personal observation of teachers in Ethiopian Schools, including many students on Ethiopian University Service, has led the author to conclude that teaching in Ethiopia is highly stereotyped. Fixed patterns of lecture, recitation and drill predominate.... This being the case, as beginning teachers our own Faculty of Education students will not likely change for better unless the problem is called to their attention and unless they are given a clear cut concept of...teacher role.

What Willcox observed a long time ago seems to describe the current state of a affairs. In a report of ERGESE (MOE 1986:9) it is indicated that the lecture and question answer-method predominate and that teachers do not teach in a practical way. It is further stated in the report that TTI academic staff need to have their own didac skills strengthened so as to improve the performance of their trainees in the classroom. Abraham (1986: 90) also remarked:

> One could assess that the present way of preparing teachers for senior secondary schools is pedagogically inadequate to produce teachers with psychological readiness and professional competence, without which the quality of education can not be maintained.

According to Abraham, there is no senior secondary school teacher education program as such. It is not with the intention to become teachers that students enroll in the various departments of AAU.

Erkyhun et.al (1991) had similar observation. They noted that teaching was teacher dominated and unsatisfactory both at the elementary and TTI levels. The problem of teacher education and quality of teachers was summarized in the Education Sector Strategy (1994:3-4) as follows.

> Though the paper qualifications of teachers at all levels have improved over the years, a significant number are still inappropriately and inadequately trained for the level they are teaching.+++The process of preparation of teachers starting from recruitment right through the actual training to the quality and competence acquired at the end is unsatisfactory.

Some of the recommendations given by the research studies cited above include the following.

a) Strict admission requirements
b) Prolonging the duration of primary teacher training, particularly that of practice teaching.
c) Certification (Licensing to teach).
d) Increase the types and number of professional courses offered in teacher training programs.
e) Strengthening the professional competency of teacher educators.

f) Special establishments charged with special responsibility of secondary teacher education.

g) Establishing policy with regard to secondary teacher education.

It seems that due consideration has been given to such research findings and recommendations, in the Education and Training Policy (1994). The statements of the policy regarding the recruitment, training, methodology, organization, professional ethics and career development of teachers indicate this fact. The establishment of new secondary teacher education institutions at Dilla and Alemaya is also an example of measures taken by the government to improve teacher education.

2.2 Teaching Effectiveness

Although researchers have made greater effort to determine the effects of certain patterns of teaching on the performance of students the task of identifying, with greater precision, what makes one teaching procedure more effective than the other, has been more problematic (Azeb 1986:14). This is so because firstly, one factor of effective teaching is not independent of the other. Gagne (in Azeb 1986:14) exemplifying this, stated that since students are in general highly motivated for good grades, the effects of ineffective procedures may be masked or even misinterpreted when course examinations are used as criterion measures.

Secondly, establishing a satisfactory criterion of teaching effectiveness is a critical problem because teaching means many different things and it varies from person to person and from situation to situation. An example of this could be the effect of academically oriented teachers on student gains. Academic oriented teachers produce more academic gains than affective oriented ones (Prawat and Nickerson in Porter 1988:5), but they are less likely to promote self-esteem and intrinsic motivation (Deci and Sheimen, Ibid).

Accordingly, these academically oriented teachers could be effective or poor depending on who is judging them. They may be considered as effective by proponents of the academic scholar perspective, while they may be poor or ineffective for an educator whose orientation is child-centred.

A major common finding of teacher effectiveness research, therefore, is the lack of a single effective set of teaching behaviors that always work (Schott 1989:104). Some educators thus claim that good teaching can not be defined because the criteria differ for every instructional situation and every teacher (Perrott 1987:1). Nevertheless, although teaching is a complex task, and although the criteria of effective teaching are complex and diversified, there are specific teacher competencies or characteristics that educators agree to be good or effective. Many studies have been conducted to determine such desirable teacher competencies or characteristics.

One technique that has been used extensively to determine desirable characteristics of teachers is questioning pupils the quality of teachers they admire. William (in Richey 1979:40) asked 2000 Colorado high school seniors to identify the most effective and least effective teachers they had experienced during their school career. He categorized their comments concerning their most effective teachers into the following six areas according to frequency of occurrence.

1. Interest in student
2. Interesting class management
3. Enthusiasm for teaching
4. Students required for work
5. Impartiality by the teacher
6. Respect for student opinion.

Another technique for identifying the characteristics of good or effective teachers is to study the lists of competencies for teaching that have been developed by educators (Richey 1979:4). These competencies are based on their experiences as teachers and their observations of work with others. Hamacheck (in Richey 1979:41) indicated that good teachers seem to reflect more of the following behaviors.

1. Ability to perceive the world from the student's point of view.
2. Ability to "Personalize" their teaching.
3. Willingness to experiment, to tryout new things.
4. Skill in asking question (as opposed to seeing self as a kind of answering device).
5. Knowledge of subject matter and related areas.
6. Willingness to be flexible (to be direct or indirect as the situation demands).
7. Provision of well - established examination procedures.
8. Provision of definite study help.
9. Reflection of an appreciative attitude.
10. Use of unconventional manner in teaching-informal, easy style.

With the shift of major emphasis from the teacher as a source and purveyor of knowledge to the teacher as an organizer and mediator of the learning encounter, a new set of competencies are being identified as components of the professionality of the teacher (Goble and Porter 1977:64). Ultimately, researchers have directed their attention to studying the impact of specific teacher behaviors, on the specific cognitive and affective behavior of their students (Borich 1988:3). He further clarified the point by stating that the study of teachers turned to research on their effects on students and this new ways of studying classroom behavior have made the student and teacher-student interaction the focus of modern definition of effective teaching.

From such research findings, Borich (1988:7) identified 10 teacher behaviors that have shown promising relationship to desirable learning outcomes, primarily as measured by achievement on classroom and standardized tests. The first five of these teacher behaviors include clarity, variety, engagement in the teaching-learning process and moderate-to-high success rates. He identified these teacher behaviors as key behaviors because their presence is considered to be essential for effective teaching. The other five behaviors include use of student ideas, structuring, questioning, probing and enthusiasm. He defined these as catalystic or helping behaviors, because according to him, they occur in various mixtures to help implement the key behaviors.

Finally, there is a persistent common opinion among educators that understanding of the nature of effective teaching would be a prerequisite to effective preparation of teachers because it can afford clues as to what they should be taught or as to what the repertory of behaviors that an effective teacher must possess. This means that to improve the quality of education, teachers are to be trained to exhibit more of the kinds of knowledge, skills, procedures and attitudes which will lead to the desired outcomes of the students (Schott 1989:56). Indicating the relationship between knowledge about the nature of effective teaching and effective training, Glissman, et.al (1988:25) Wrote:

> The task of training effective teachers requires two kinds of empirical knowledge: knowledge about how training contributes to the acquisition of teaching skills and knowledge about how teaching skills influence pupil learning.

2.3 The Didactic Elements of A Lesson

As stated in chapter one of the study, findings of classroom research have provided support for the effectiveness of including each of the didactic elements in most lessons. A detailed review of the literature on each didactic element is provided in the following pages of this chapter.

2.3.1 Importance of Instructional Sets

The concept of instructional sets comes from research on learning. Research on learning indicates that pre and post instructional activities or sets of a learning task have influence upon the outcome of that task. Investigators who counted the use of teacher structuring - statements designed to provide an overview for what is to happen or has happened at the start or at the end of lessons have observed significant results (Rosenshine, et.al 1971:52). Gage (1976:35) have also observed that students of teachers with high structuring have achieved better. In his experiment, high structuring consisted of:

- reviewing the main ideas and facts covered in a lesson at the end of a lesson and at the beginning of the next lesson.
- stating objectives at the beginning of a lesson.
- outlining the lesson content.
- signalling transitions between parts of a lesson.
- indicating important points in a lesson; and,
- summarizing the parts of a lesson as the lesson proceeded.

There is a contention among psychologists that one of the essential conditions in learning is that the learner be actively engaged in the process in order to maximize the possibility of new behavioral response. The teaching skill directed toward eliciting this involvement was defined by researchers at the Standford university and labelled as set induction (Schuck 1981:227). Studies

and related readings on set indicate that it is a powerful variable in determining the kinds of learning that will occur in the classroom and that the teacher is an instrumental agent in arousing or inducing pupil's set toward learning (Schuck 1969:279). Schuck found out that pupils taught by teachers trained in the deliberate use of set induction techniques achieved significantly higher than those exposed to teachers no so trained in this instructional skill.

In most cases set induction consists of two parts: attention getter or motivator and advance organizer (Moore 1995:89). The main functions of a motivator are to get students' undivided attention and arouse their interest and curiosity so as to establish involvement in the forth coming lesson. Teachers can use a variety of techniques to gain students' attention and arouse their interest and curiosity (Barnes in Barell 1985:21), Cole and Chan (1994:98), Moore (1995:87), and others.

- Simply stand silently facing the class-soon the entire class will be drawn to the silence,
- Begin speaking in a very low tone and gradually raise your voice to a normal volume when the classis quiet and attentive,
- Use of an explanatory model,
- Presentation of a challenging question or problem to be solved,
- Relating the lesson to a topic of vital interest to the class.

Stating the objectives of the lesson is also considered as an important mechanism by many authories. It is further argued by authorities that students learn more when they know what to expect from a lesson. This function is served by an advance organizer which provides with an overview of the previous lesson and an outline of key ideas of the present lesson. Advance organizer acts as a kind of conceptual bridge between the new and the old information (Moore 1995:89).

The concept of advance organizer is based on Ausubel's subsumption theory. Ausubel (in Lawton and Fowell 1978:76) described meaningful learning

as that which occurs when an individual's appropriate existing knowledge interacts with new information in a non-arbitrary way. According to Lawton and Fowell (1978:78), advance organizers facilitate the incorporation and retention of new information in three ways:

a) by activating relevant subsumers already present in the learner's cognitive structure.

b) by providing subsumers where non-existent; and,

c) by reducing the necessity of rote memorization since anchoring ideas to which details can be meaningfully related are supplied.

Ausubel's subsumption theory has a wide research support. Allen (1970:33) stated that studies have shown that the learning of meaningful material can be facilitated by the provision of highly generalizable concepts under which new meanings may be subsumed. Lawton and Fowell (1978:80) also pointed that a number of studies support the contention that advance organizers facilitate meaningful learning and retention. Kloster and Philip (1979:9) had similar observation. But they stressed the point that the students' ability to link new information is critical. When students are unable to link correctly, their achievement may suffer relative to groups that have not been given an advance organizer.

The other instructional set which is helpful for meaningful learning is closure. Closure is a complement of set induction which draws the attention of students to the end of a specific learning sequence or of an entire lesson by focusing on key points that have been learned (Perrott 1987:27). One of the key aspects of effective closure in terms of Stones (1979:322) is that the learners leave in a highly motivated state, either to continue the learning independently or to be enthusiastically looking forward to the next lesson on the subject.

From what has been said above, one can see that closure, as a complement of set induction, has psychological as well as cognitive functions.

Recapitulation by the teacher will consolidate the concepts that have been taught and orient the pupils to the continuation of the work to the next lesson (Stones 1979:321). Some of the more important activities required of the teacher for effective closure include the following.

- Reviewing the main ideas and facts covered in the lesson at the end,
- Setting assignments and further reading tasks based on the lesson,
- Briefly describing what will happen in the next lesson in the subject.

2.3.2 Lesson Development

The direct teaching phase involves explicit instruction of subject matter. As Cole and Chan (1994:99) contended, all lessons should include some direct and explicit teaching activity, no ,matter how brief it is. Even when it is planned to use discovery learning or experiential teaching methods, Cole and Chan believed that the teacher should start by teaching one or more aspects of the topic directly.

2.3.2.1 Clarity of Explanation

Clarity of explanation (presentation) is an aspect of teacher behavior which has considerable influence on the effectiveness of classroom teaching. Some educators thus argued that lack of clarity appears to be a major barrior for effective presentation of explanations. One surprising result from research on teacher clarity, according to Borich (1988:8) is that teachers considerably vary on this behavior.

For Perrott (1987:33), simplicity, explicitness and continuity are important factors for effective explanation. According to her, the inclusion of too much

information in one sentence is a common cause of failure. Moreover, the use of technical or specialized terms without explanation or definition of their meanings does not add to the effectiveness of explanation. The use of simple language within the pupil's normal vocabulary is necessary. Perrott further contended that the assumption that there is more common ground between the teacher and his pupils is a major reason for failure to explain effectively.

The other important factor to effective explanation as mentioned above is continuity. In terms of Perrott (198733) continuity is a function of sequence of discourse and fluency. Sequence of discourse refers to the logical connections between the various points dealt within a lesson. And when the teacher diverts from a central point or theme as a result of pupil participation or any other factors, he must make the diversions minimal and make clear to the students which the diversions are.

Fluency is considered as important, not only in discourse, but also in questioning. In clarifying this point, Perrott (1987:34) noted that if a teacher provides further information or restates the question differently because he feels his first question lacks precision or too difficult, he is likely to confuse pupils by dividing their attention between his previous information and the new information he is giving them. "Ideally," she argued, "questions should be phrased initially in such a way that it is possible to answer them without additional help." Most effective teachers phrased questions so that they were answered the first time without additional questions interpersed before the student responded (Rosenshine and Furst 1971:44).

The elements in fluency in asking questions, according to Brown (1985:104) are clarity and coherence, pausing and pacing, directing and distributing, and prompting and probing. Brown stated that beginner teachers frequently ask more questions than they receive answers. According to him,

their failure to obtain answers is often due to lack of pause and no variation in their delivery of questions (pacing). Asking complex questions at a quicker pace results in confusion making the pupils silent and be wildered. He further contended that skillful directing and distributing helps to maximize class participation. Directing questions in a non-threatening way towards pupils who are reluctant to participation will help to draw them into the discussion.

The use of examples is another important skill in clarity of explanation. In terms of Perrott (1987:37), the use of examples is basic to teaching and is a skill commonly used in clarity of explanation. She clarified the point by stating that effective teaching of new concepts, relationships or principles depends on the teacher's ability to use examples and seek examples from pupils, in such a way as to help pupils to comprehend these new concepts.

Finally, there is a contention among scholars that clarity behaviors can be taught in teacher education program and assessed in terms of their effect on student achievement. Bush, et.al (1977:53) and Land and Smith (1979:197) are some of the scholars who advanced the position that clarity behaviors can be discriminated and incorporated into pre-service education courses.

2.3.2.2 Varying the Stimulus

A number of studies focused on the teacher's use of variability during the lesson. The purpose of this skill is to arouse pupils' attention so as to focus upon the content of the lesson. Perrott (1987:28) defined stimulus variation as "those teacher actions, sometimes planned and sometimes spontaneous, that develop and maintain a high level of attention on the part of the pupils during the cause of the lesson." Varying the stimulus as a teaching technique is based on the theory of learning which states that uniformity of perceived environment

teds to lead pupils into mental inactivity, while changes in the perceived environment attract their attention and stimulate mental activity.

The stimulus variation techniques suggested by Perrott (1987:30) include the following.

(a) Teacher Movements - can have important effects on pupils' behavior, but should not be random and nerveous.

(b) Focusing behavior - is the teacher's way of intentionally directing pupils' attention. This control is mainly accomplished by the use of either verbal statements, specific gestures or some combinations of the two. Eg. Emphasis of particular words, sentences, or directions, eye movements, facial expressions, movements of head, arms body, etc.

(c) Changes in the speech pattern - changes in the teacher's voice from low-to-high tones help to draw pupils' attention.

(d) Changing interactions - a shift from teacher's talk to either teacher - pupil dialogue or pupil - pupil conversations can attract pupils' attention and stimulate their mental activity.

(e) Shifting sensory channels - the use of different audio-visual materials helps for pupils' active involvement by addressing to their different senses.

Both high-inference and low - inference correlational studies have indicated that student achievement is positively related to classrooms where a variety of instructional procedures and materials is provided, and where the teacher varies the cognitive level of discourse and tasks (Rosenshine and Furst 1971:45). Wyckoff (1973:86) also noted that variables such as movements, gesture and voice variation have effect on pupil achievement and pupil attitude toward instruction. He observed that the more successful explanation (interms

of student achievement) had more gesture and movement on the part of the teacher than the less successful ones.

But there is a fear that increase in the frequency of stimulus variation can distract younger students from attending to the content of the lesson. In Wyckoff's (1973:85) observation, increase in the frequency of stimulus variation on the part of the elementary teachers resulted in lower student achievement, where as it resulted in improved student performance on the part of secondary teachers. This reminds us that stimulus variation need not be random, but carefully considered by the teacher.

2.3.2.3 Student Engagement in the Teaching- Learning Process and the Use of Student Ideas.

The amount of learning time devoted to a subject as it relates to a teacher's task orientation and content coverage is a recently researched behavior. The amount of instructional time students are actually engaged in learning the material presented is termed by Borich (1988:1) as the engagement rate or the on-task behavior of students. For Borich, the key to understanding engagement rate is the awareness that while a teacher can be task-oriented, providing maximum content coverage and communicating high expectations, the students may not be engaged all of this time. They may be mind absent or emotionally detached. Correcting such types of disengagement is one of the most difficult tasks of the teacher.

Combining data from several process-product researchers, Brophy and Good (in Brophy 1992:6) concluded that both student engagement (time on - task rates) and student gains are enhanced when teachers:

(a) give assignments and seat works that students can complete successfully if they invest reasonable effort in them (rather then assignments that are confusing and frustrating)

(b) provide clear task directions and, if necessary, lead students through practice examples before releasing them to work independently.

(c) circulate the room to monitor progress and provide help once students begin to work independently; and,

(d) keep these helping interactions brief so as to be able to continue circulating.

Preventing misbehaviors from continuing long enough to increase in severity or spread and affect other children is also considered as helpful teacher behavior.

According to these authorities, the above activities are not frequently followed. They pointed out that teachers do concentrate on procedural requirements rather than the content aspect of the task and activities. Moreover, teachers seldom make clear the purpose of assignments and structured them effectively so that students can work them.

Another important teacher behavior strongly related to student engagement is the use of student ideas. The behavior identified as "teacher use of student ideas" was originally developed by Flanders in 1965(Rosenshine and Furst 1971:49). The general principal supporting the use of praise and the use of student ideas is that of affective reinforecement. Students generally tend to repeat behavior for which they have been praised or when credit is given for their ideas.

Flanders (in Rosenshine and Furst 1971:49) has attempted to divide this behavior into five sub-categories.

(a) Acknowledging the student's idea by repeating the nouns and logical connectives he has expressed.

(b) Modifying the idea by rephrasing it or conceptualizing it in the teacher's own words.

(c) Applying the idea by using it to reach an inference or take the next step in a logical analysis of a problem.

(d) Comparing the idea by drawing a relationship between it and ideas expressed earlier by the student or the teacher.

(e) Summarizing What was said by an individual student or group of students.

As Rosenshine and Furst (1971:49) and Brophy (in Borich 1988:13) noted, these five ways of using student ideas are more strongly and consistently related with student engagement and ultimately with student achievement than a simple expression of approval, such as "Good".

CHAPTER THREE
METHODS AND PROCEDURES OF THE STUDY

The descriptive research method was employed in this study since it attempted to secure data on instructors' lesson presentation skills or behaviors as they occurred in a classroom setting. According to Mouley (1963:235), descriptive studies are oriented toward the description of present status of a given phenomenon rather than the isolation of causative factors. On the basis of this general approach, the following procedures were employed in the collection and analysis of the necessary data.

3.1 Population and Sampling Procedures

There are two TTIs, namely, Debre Berhan and Dessie TTIs in the Amhara region. Instructors of these two institutes were thus the target groups of the study during its initial phase. However, as indicated in chapter one, there was a sudden change of program in Debre Berhan TTI. Instead of the usual pre-service training program, short in-service training programs or workshops for teachers of the 2nd cycle primary education were scheduled in the 1990 E.C. academic year.

Because of this, it was only instructors of Dessie TTI that were included in the study. To make the findings and the conclusion more reliable and generalizable, all instructors of the institute were included in the study. The fact that Dessie TTI is now the only institute which provides the formal pre-service training in the region can also be an acceptable justification for the conclusion made from the available data about TTI instructors in the region.

3.2 Data Gathering Instrument

The main purpose of the study was to investigate the extent to which TTI instructors in the Amhara region effectively employ the didactic elements of a lesson in the teaching-learning process. Hence, the systematic observation technique was used for data gathering. In terms of Medley and Mitzel (1967:247), there is no more obvious approach to research on teaching than direct observation of teachers while they teach, and pupils while they learn.

As indicated in chapter one of the study, lesson presentation skills are categorized into three (set induction, lesson development and closure) by Robinson (1983), Callahan and Chan (1988), Curzon (1990), Kasambira (1993), Cole and Chan (1994), Moore (1995), and by any others. But other authorities such as Gagne and Briggs (in Borich 1988), and Perrott (1987), split these didactic elements of a lesson into 7 and 5 components respectively. An observation checklist was thus developed by adapting and integrating items from the models of these scholars and other research articles that dealt with specific aspects of the didactic elements of a lesson.

A rating format with a 4 - scale rating ranging from "Often Used" to "Never Used" was also designed for rating instructors in terms of each item on the basis of the observations made. Research studies using specific items with rating forms have yielded promising results (Rosenshine 1970:286). Furthermore, rating forms offer greater flexibility to include high-inference variables.

Then, the following steps were taken before actual observation.

1. The observation checklist was reviewed and judged by 5 former TTI instructors who were attending their post graduate studies in the Department of Curriculum and Instruction of the Faculty of Education, regarding specifically the clarity and relevance of the items.

2. As argued by some scholars, teachers and pupils behave differently when a visitor is present than no visitor is present. For this reason, according to Medley and Mitzel (1967:306), two most obvious precautions would be:

   - except during the development of a technique, no more than one or, at the most, two visitors should be present in the classroom at the sametime.
   - the teacher to be observed must understand clearly the purpose for which the data are to be collected and how they are to be used.

Taking this into consideration, two observers who have good background in pedagogics were trained in how to use the observation checklist and in how to make the rating with the help of a manual prepared by the researcher. After that, they practiced two observation sessions before actual observation. Such a training is a crucial factor in increasing observers agreement and will reduce the difficulties that observers may encounter in recording findings where up to 70 categories are used in an observation checklist (Hilsum and Cane 1979: 43).

3. To check the reliability of the instrument, a tryout study was made in Awassa TTI on 3 purposefully selected subjects, namely, Amharic from academic subjects, physical education from non-academic subjects, and psychology from professional courses. Each instructor was observed for 3 sessions (lessons) by the two observers and then rated on the basis of the observations made.

The reliability of the instrument was determined by computing the coefficients of correlation of scores of the two raters for each subject (instructor). The result is summarized in the table below (See appendix IE for details).

Table 1. Coefficients of Correlations (r) of Raters

Serial No	Subject	r
1	Amharic	0.91
2	Physical Education	0.91
3	Psychology	0.94
4	Inter-Subject	0.92

The above table indicates that the coefficients of correlation between raters are high. The Inter-subject coefficient of correlation, which is 0.92, is also high. This implies that the observation checklist is reliable for the intended purpose. This means, in other words, any competent observer or rater with the necessary training and practice can obtain similar results (findings). Reliability coefficients tell us how accurate our measurements are (Medley and Mitzel 1967: 254).

4. On the basis of the information gained from the judges and the tryout study, some improvement was made on the instrument for the final observation. During the final observation, each instructor was observed by two observers using the standardized checklist for 3 periods (lessons). Thus, a total of 60 periods were required to observe 20 instructors included in the study. Finally, the observers rated independently each instructor on the basis of the findings of the observations.

3.3 Method of Data Analysis

The first step in analysing the data secured through observation was counting the frequencies under each rating scale and put the findings in

numbers and percentages. Then, the mean values of every instructor in each of the five categories, i.e. set induction, clarity of explanation, varying the stimulus, student engagement and the use of student ideas, and closure were computed. Similarly, the mean scores of all instructors for each item and ultimately for each didactic element were computed.

In the analysis made based upon the scores mentioned above, the percentage system was largely employed because of the discriptive nature of the study. In addition to the percentage system, each of the teaching behavior under treatment was examined in terms of instructors' high and low scores. In this case, high and low scores mean scores above and below the average value, i.e. 2.5 respectively. This means, in other words, high score refers to a mean score of an instructor which was above average (2.5), while low score means a mean score of an instructor which was below average.

On the otherhand, each of the teaching behaviors of instructors, i.e. set induction, clarity of explanation, etc. was correlated with their teaching experience and qualification. As far as instructors' teaching experience is concerned, their total teaching experience and their teaching experience at the elementary school level were treated separately. Emphasis was given to instructors' teaching experience at the elementary school level for two reasons. Firstly, all instructors had some experience in teaching in secondary schools, while only 8 instructors have taught in elementary schools. Secondly, teaching experience in elementary schools can have direct relevance with the primary teacher education program.

Accordingly, to see the relationship between instructors' teaching behaviors under discussion and their total teaching experience, the spearman's rank difference coefficient of correlation was employed. Furthermore, to determine the association between instructors' teaching behaviors and their

qualification as well as their teaching experience in elementary schools, the point bi-serial correlation was used.

Point bi-serial correlation provides a measure of the relation between a continuous variable and dichotomous Variable (Ferguson 1981: 427). In the case of this study, instructors' qualification (degree or non-degree) was a dichotomous variable, where as their teaching behaviors were continuous. Degree and non-degree here refer to instructors who had a minimum of BA or BSC, and those who had either a college diploma or TTI certificate respectively. As far as teaching experience at the elementary school level is concerned, instructors were dichotomized as those who have taught in elementary schools, and those who have not taught in elementary schools. See appendix IV for details of the biodata of instructors observed.

Finally, all relationships were tested for statistical significance at 0.05 level. Alpha 0.05 level of significance was selected because, according to authorities, it is neither too high nor too low for most social and educational research.

CHAPTER FOUR
PRESENTATION AND ANALYSIS OF DATA

This part of the study is devoted to the presentation and analysis of data secured through consecutive observations of Dessie TTI instructors' employment of the didactic elements of a lesson. The chapter consists of two parts. The first section is concerned with the presentation and analysis of instructors' employment of the didactic elements of a lesson. In the second part, the relations between instructors' teaching behaviors under treatment and their teaching experience and qualification are analysed.

In presenting the data in tables in this chapter and in the respected appendices, the following codes are used.

01 - Set induction
02 - Clarity of explanation
03 - Varying the stimulus
04 - Student engagement in the teaching-learning process and the use of student ideas.
05. - Closure.

4.1 Instructors' Employment of the Didactic Elements of a Lesson

As indicated earlier in chapters one and two, findings of classroom research have provided support for the effectiveness of including each of the didactic elements in a lesson. In light of this, instructors' use of each didactic element is presented and analysed as follows.

4.1.1 Instructors' Use of Set Induction

It is contended by psychologists that the student's active engagement in the process is one of the essential conditions for maximizing the possibility of new behavioral response. The teaching skill which helps to elicit this involvement is termed by authorities in the field as set induction. Instructors' employment of this teaching skill is presented in the table below (see appendix IB for details of all the items discussed in this section).

Table 2. Instructors' Use of Set Induction (1.1,1.2, etc represent instructor behaviors that are put in terms of discriptive statements in the rating format while 4,3,2 and 1 are ratings of the behaviors. The same is true for tables 3,4,5 and 6. See appendix Ic-pp.79-80 for full information).

Item	4		3		2		1		$\bar{X}$
	No	%	No	%	No	%	No	%	
1.1	13	65	6	30	-	-	1	5	3.55
1.2	1	5	1	5	3	15	15	75	1.40
1.3	1	5	4	20	2	10	13	65	1.65
1.4	-	-	1	5	1	5	18	90	1.15
1.5	-	-	-	-	2	10	18	90	1.10
1.6	-	-	1	5	1	5	18	90	1.15
1.7	1	5	-	-	2	10	17	85	1.25
1.8	-	-	-	-	1	5	19	95	1.05
Grand $\bar{X}$									1.54

Set induction as already described in the previous chapters, has two parts: attention getter or motivator and advance organizer. The function of the first is psychological, where as that of the second is cognitive. Table 2 indicates that thirteen instructors (65%) often provided overviews of previous lessons, i.e. in all of the observed lessons, whereas 6(30%) did this sometimes (in two of the observed lessons).It was only one instructor who never provided overviews of

previous lessons. Since previous lessons can not be completely new or different from present lessons, i.e., since some continuity is expected from previous lessons, overviews of previous lessons provide advance organizer. Nonetheless, although this technique of providing advance organizer was well employed by instructors, it can be seen from the table that the rest (refreshing students' memory of general knowledge related to the day's lesson, outlining the key points of the present lesson, and making clear to students what is expected of them during the course of the lesson - items 1.2 - 1.4) were least used by instructors. Consecutively 75%, 65% and 90% of them never used these. As a result of this, the mean scores for these techniques remained very low, 1.40, 1.65 and 1.15 respectively.

With regard to attention getter, all the techniques (items 1.5, 1.6 and 1.7) were never employed by the vast majority of instructors, that is, by 90%, 90% and 85% respectively. Only 5% - 10% used them rarely. The last technique (using explanatory models - item 1.8) has both psychological and cognitive functions. Nonetheless, this technique too was the least used one. It was only one instructor who used it rarely, while 19 instructors (95%) never employed it.

The above findings show that set induction was the least used didactic element. the fact that the mean scores of all instructors for this didactic element were low or below average (below 2.5) supports this (appendix III). The grand mean score of all instructors for set induction was also very low, only 1.54 (table 2). From all of this, it will be safe to infer that instructors were ineffective in their employment of set induction. In other words, set induction was the most neglected and forgotten didactic element by instructors. It might be from findings similar to the above one that Barell (1985:21) stated that too often teachers forget to set a stage for learning. Instructors' failure in employing this didactic element might be due to lack of awareness and

conviction with regard to its nature and importance, or due to lack of the necessary skill, or both.

4.1.2 Instructors' Clarity of Explanation

Clarity of explanation is an important teacher behavior which has considerable influence on the effectiveness of classroom teaching and learning. The data regarding the clarity behavior of instructors is presented in the table below.

Table 3. Clarity Behavior of Instructors

Item	4		3		2		1		$\bar{X}$
No	%	No	%	No	%	No	No	%	
2.1	18	90	1	5	1	5	-	-	3.85
2.2	16	80	4	20	-	-	-	-	3.80
2.3	17	85	3	15	-	-	-	-	3.85
2.4	10	50	3	15	3	15	4	20	2.95
2.5	1	5	1	5	2	10	6	80	1.35
2.6	17	85	2	10	1	5	-	-	3.80
2.7	6	30	4	20	3	15	7	35	2.45
2.8	1	5	-	-	6	30	13	65	1.45
2.9	8	40	1	5	5	25	6	30	2.55
2.10	8	40	1	5	6	30	5	25	2.50
2.11	1	5	6	30	7	35	6	30	2.10
2.12	1	5	6	30	9	45	4	20	2.20
							Grand $\bar{X}$		2.74

From table 3, it can be seen that 18 instructors (90%) often avoided unnecessary technical terms and complex sentences (item 2.1). The remaining 2 instructors avoided them either sometimes or rarely. Regarding explanation of the meaning of new words and pronunciation of words distinctly (items 2.2. and 2.3), instructors performance was also good. Sixteen (80%) and seventeen (85%) performed them in all of the observed lessons respectively. On the other hand, 10 instructors (50%) often wrote important things on the board while explaining, 3(15%) sometimes, and 3(15%) rarely (item 2.4). There were four instructors (20%) who never exhibited this behavior. The other clarity behavior treated was concerned with the use of visual materials for explanation (item 2.5). The vast majority of instructors (80%) never used visual materials for explanations. It was only one instructor who often used visual materials, while one instructor used sometimes. The remaining 2(10%) did this rarely (only in one of the observed lessons).

The table further indicates that 17 instructors (85%) often explained something and then stopped so that students can think about it (item 2.6). The other 3(15%) showed this behavior either sometimes or rarely. With regard to the use of examples (items 2.7 and 2.8), 7(35%) and 13(65%) never gave examples from real life conditions or asked student to give examples, while 3(15%) and 6(30%) either gave examples or asked students to give examples rarely. The rest (10 and 1 instructors respectively), performed these behaviors either often or sometimes.

As far as the questioning skill of instructors is concerned, (this includes asking questions to find out if students understand what is told to them, phrasing questions precisely and explicitly, explaining answers to student questions clearly, and showing students where they are wrong - items 2.9 - 2.12) the overall performance was poor. Accordingly, 55%, 55%, 65% and 65% of them either rarely or never employed these techniques consecutively. Only the

first two techniques were often performed by a relatively significant number of instructors (by 8, i.e. 40% each).

Nonetheless, when all the above findings are considered, or taken together, it can be said that the overall clarity behaviour of instructors was good. The mean scores of instructors confirm this. The mean scores of 15 instructors (75%) were above average whereas that of only 5 (25%) were low or below average (appendix III). This means that instructors high scores were by far greater than the low scores. The grand mean score of all instructors for clarity of explanation was also relatively high - 2.74.

Clarity of explanation essentially represents instructors' direct behavior. Thus instructors' good performance of this didactic element implies that they were effective in their direct influence. Ofcourse, to see the full picture, this needs to be compared with their performance of student engagement and the use of student ideas which essentially represents instructors' indirect behaviour. This comparison is made in the analysis under table 5.

4.1.3 Stimulus Variation Techniques of Instructors

As described in chapter two, the teaching skill varying the stimulus is based on the theory of learning which states that uniformity of perceived environment tends to lead pupils into mental inactivity, while changes in the perceived environment attract their attention and stimulate mental activity. Accordingly, research findings indicated that student achievement is positively related to classroom where a variety of instructional procedures and materials is provided, and where the teacher varies the cognitive level of discourse and tasks. Instructors' employment of the teaching skill varying the stimulus is summarized in the table below.

Table 4. Varying the Stimulus Techniques of Instructors

Item	4		3		2		1		$\bar{X}$
	No	%	No	%	No	%	No	%	
3.1	5	25	-	-	5	25	10	50	2.00
3.2	17	85	2	10	1	5	-	-	3.80
3.3	16	80	2	10	1	5	1	5	3.65
3.4	2	10	2	10	-	-	16	80	1.50
3.5	12	60	6	30	2	10	-	-	3.50
3.6	11	55	6	30	3	15	-	-	3.40
3.7	5	25	3	15	2	10	10	50	2.15
Grand $\bar{X}$									2.86

The first two techniques of varying the stimulus treated in this study were concerned with instructors' focusing behavior (items 3.1 and 3.2). Five instructors (25%) often focused important points by way of verbal statements. Another 5 employed this behavior rarely. Ten instructors (50%) never exhibited this behavior. The second focusing behavior, i.e. stressing important points by way of facial expressions, body movements, etc. was often performed by 17 instructors (85%). Two instructors (10%) used this technique in two of the observed lessons, one instructor used rarely.

It is further observed in table 4 that 16 instructors (80%) often changed their speech pattern, 2(10%) sometimes, 1 only rarely, while 1 instructor never changed his speech pattern (item 3.3). On the other hand, only 2 instructors (10%) used different audio-visual materials in all of the observed lessons (item 3.4). Two instructors (10%) used audio-visual materials in two of the observed lessons, whereas 16 instructors (80%) never used audio-visual materials. This

shows that the vast majority of instructors were poor in addressing to the different senses of their students.

With regard to drawing the attention of inattentive or misbehaving students (items 3.5), 12 instructors (60%) often employed relevant techniques, 6(30%) in two of the observed lessons, and 2 instructors (10%) only in one of the observed lessons. Concerning instructors' movement (item 3.6), 11 instructors (55%) often moved from one corner to the other, 6(30%) did this sometimes, and the remaining 3(15%) only rarely. The last issue treated with regard to varying the stimulus was varying tasks and activities required of the students (item 3.7). From the table one can see that the technique was least used by instructors. Only 5 instructors (25%) often varied tasks and activities required of their students, while 10 (50%) never varied tasks and activities. The rest performed this teaching behavior either sometimes or rarely.

From the above findings, it can be safely said that the overall performance of instructors in varying the stimulus was good. The fact that the mean scores of only 4 instructors were below average or low while that of 16 instructors (80%) were high or above average confirms this (appendix III). Viewed from a different angle, only the mean scores of 3 items were low whereas the mean scores of 4 items were very high. The grand mean score of all instructors for varying the stimulus was also high, 2.86.

4.1.4 Student Engagement Techniques of Instructors and Their Use of Student Ideas

As indicated in the literature review (in chapter two), teachers can enhance student engagement and ultimately student achievement by employing relevant techniques. Instructors' use of this teaching skill is discussed as follows.

Table 5. Instructors' Student Engagement Techniques and Their Use of Student Ideas

Item	4		3		2		1		$\bar{X}$
	No	%	No	%	No	%	No	%	
4.1	-	-	-	-	3	15	17	85	1.15
4.2	7	35	7	35	1	5	5	25	2.80
4.3	7	35	3	15	6	30	4	20	2.65
4.4	2	10	6	30	6	30	6	30	2.20
4.5	10	50	4	20	5	25	1	5	3.15
4.6	10	50	3	15	3	15	4	20	2.95
4.7	6	30	5	25	4	20	5	25	2.60
4.8	4	20	5	25	3	15	8	40	2.25
4.9	2	10	-	-	2	10	16	80	2.40
4.10	1	5	1	5	2	10	16	80	1.35
4.11	2	10	-	-	2	10	16	80	1.40
4.12	2	10	1	5	1	5	16	80	1.45
4.13	1	5	2	10	1	5	16	80	1.40
Grand $\bar{X}$									2.06

The first student engagement technique treated was calling students by name (item 4.1). Calling a student by name helps him to feel considered and ultimately get motivated to actively participate in the teaching-learning process. Table 5 shows that this technique was the least used one. Seventeen instructors (85%) never called their students by name. The remaining 3(15%) called their students by name only rarely. As a result of this the mean score for this technique remained 1.15, which is nearly 1 or never used in the rating scale. On the other hand, 4 items concerning the questioning skills of instructors which help to enhance student involvement were included in the rating format

(items 4.2 - 4.5). These included asking questions that require many possible responses, giving clues to the answer of a question when a student could not give full correct answer, directing questions to less participative students in a non-threatening way, and giving chance to other students to answer questions which are not answered by a student. The mean scores of instructors for each of these items were 2.80, 2.65, 2.20 and 3.15 respectively. These findings uncover the fact that instructors were more skillful in phrasing divergent questions, i.e, questions that require many possible responses, in prompting, as well as in distributing questions. But they were poor in directing questions, specifically to less participative students. Only 2 instructors (10%) often directed questions to less participative students in a non-threatening way, while 6(30%) did this sometimes. Six instructors (30%) performed this behavior only rarely, whereas 6(30%) never performed it.

The other instructor behavior that has strong relationship to student engagement is the use of student ideas. As stated in chapter two, students generally tend to repeat behavior for which they have been praised or when credit is given for their ideas. In light of this some items concerning instructors, use of student ideas were included in the study (items 4.6 - 4.8). It is seen in table 5 that 10 instructors (50%), often acknowledged their students' ideas by simply giving remarks such as "Good". Three instructors (15%) used this techniques in two of the observed lessons, 3(15%) only rarely, and 4(20%) never employed it. The mean score of all instructors for this item was 2.95. On the other hand, 6 instructors (30%) often acknowledged students' ideas by either summarizing or repeating what they said (item 4.7). Furthermore, this technique was employed by 5 instructors (25%) sometimes, while 4(20%) used it rarely. Five instructors (25%) never acknowledged students' ideas by summarizing or repeating what they said. The mean score for the item was 2.60. The other technique of the use of student ideas, i.e., applying student ideas in analysing a point or a problem (item 4.8), was never employed by 8

instructors (40%). Three instructors (15%) used this technique rarely, and 5(25%) sometimes. Only 4 instructors (20%) often applied student ideas in analysing a point or a problem. The mean sore of the item thus was low, only 2.25. Nonetheless, from all of the findings indicated above, one can say that instructors' over all performance in the use of student ideas was good.

The remaining items (4.9 - 4.13) dealt with seat works to be given by instructors to increase the rate of their on-task behavior. Table 5 indicates that only 2 instructors often gave seat works to their students. Another 2 gave seat works only rarely, i.e., only in one of the observed lessons. The rest, i.e 80% never gave seat works to their students. As a result of this, the mean score of this item was the least, only 1.40. Among those who gave seat works, 1 often provided clear task directions, 1 sometimes, and the remaining 2 rarely. The mean score of this item too was low, 1.35. Only 2 of these instructors often circulated around the room to monitor progress and often kept helping interactions brief as well (items 4.11 and 4.12). The other 2 circulated around the room rarely to monitor progress but 1 never kept helping interactions brief. Lastly, feedback was provided by only 1 instructor in all of the observed lessons, by 2 instructors in two of the observed lessons, and by 1 instructor in one of the observed lessons. The mean scores for these techniques were thus very low, ranging from 1.35 to 1.45. This implies that the last 5 techniques of enhancing student engagement were the least used ones.

From what has been seen so far, it can safely be said that the overall performance of instructors in enhancing student engagement was poor. The mean scores of 15 instructors (75%) were low, while that of the remaining 5(25%) were only a little above the average value (appendix III). The grand mean sore of all instructors for this didactic element was 2.06, which is by far below average.

It was found out earlier that instructors' overall performance in their clarity of explanation was good. Instructors' clarity behavior essentially represents their direct influence. On the other hand, as indicated above, instructors' performance in enhancing student engagement was poor. Student engagement techniques basically characterize instructors' indirect behavior. It will not be far from reality, therefore, to say that TTI classrooms under study were instructor dominated. This coincides with the observations of Willcox (1969:5) and Rowell (1995:3). According to the observations of these scholars, schools in developing countries are characterized by a didactic classroom practice that supports only over passive learners which ultimately leads to rote learning. Instructors directness might be the effect of the interplay of two factors. The age old traditional conception and practice of teaching on one hand, and lack of appropriate training in accordance with the modern conception of teaching on the other.

4.1.5 Instructors' Employment of Closure

Closure as a complement of set induction draws the attention of students to the end of a learning task or a lesson. According to Stones (1979:321), effective closure helps the learners leave in a highly motivated state, either to continue the learning independently, or to be enthusiastically looking forward to the next lesson on the subject. Hence, closure, like set induction, has both psychological and cognitive functions. In light of this, instructors' use of this teaching skill is summarized in table 6 below.

Table 6. Instructors' Use of Closure

Item	4		3		2		1		$\bar{X}$
	No	%	No	%	No	%	No	%	
5.1	-	-	6	30	3	15	11	55	1.75
5.2	-	-	1	5	1	5	18	90	1.15
5.3	-	-	-	-	-	-	20	100	1.00
5.4	-	-	-	-	-	-	20	100	1.00
5.5	1	5	-	-	4	20	15	75	1.35
5.6	1	5	3	15	7	35	9	45	1.80
						Grand $\bar{X}$			1.34

Table 6 summarizes how instructors concluded their lessons. Among the techniques of effective closure dealt with in this study, the first was concerned with summarizing the main points of a lesson at the end (items 5.1). Six instructors (30%) sometimes summarized the main points of their lessons and 3 (15%) rarely. Eleven instructors (55%) never summarized the main points of their lessons at the end. With regard to consolidating the lesson by raising questions at the end (item 5.2), 18 instructors (90%) never employed it. Only 2 instructors consolidated their lessons by raising questions at the end either sometimes or rarely.

The worst performance of instructors was observed in encouraging and praising students to create a sense of achievement (item 5.3)and in relating what has been done in the lessons to various other experiences of the students (item 5.4). In both cases, all instructors never employed the techniques. The other two items treated with regard to closure were setting assignments and further reading tasks based on the lesson (item 5.5) and briefly describing what will happen in the next lesson in the subject (item 5.6). Fifteen instructors

(75%) and 9 instructors (45%) respectively never used these techniques. Those who used them only rarely were 4(20%) and 7(35%) respectively.

The above findings show that closure was the least used didactic element by instructors. The mean scores for all the items were very low, ranging from 1.00 to 1.80. Similarly, the mean score of all instructors were low ranging from 1.00 to 2.00 (appendix III). Moreover, the grand mean score of all instructors for this didactic element was very low, only 1.34.

It is possible, therefore, to conclude that closure, like set induction, was the most forgotten didactic element. Instructors' negligence of the instructional sets, i.e. closure and set induction, implies that either they do not have conviction with regard to their importance, or they lack awareness and skill, or both.

4.2 The Relationship Between Instructors' Employment of the Didactic Elements of a Lesson and Their Teaching Experience and Qualification

The point that teacher educators need to have appropriate preparation, professional experience and pedagogical knowledge was stressed in chapters one and two. In light of this, the relationship between instructors' teaching behaviors under treatment and their teaching experience and qualification is summarized in table 7 below.

Table 7. The Relationship Between Instructors' Employment of the Didactic Elements of a Lesson and Their Teaching Experience and Qualification

Didactic Elements	Total Teaching Experience		Teaching Experience in Elementary Schools		Qualification	
	r	t	r	t	r	t
01	0.31	1.38	0.23	1.00	-0.46	-2.20
02	0.56	2.87	0.46	2.20	-0.0009	-0.016
03	0.64	3.53	0.42	1.96	-0.32	-1.43
04	0.57	2.94	0.44	2.09	-0.33	-1.48
05	0.39	1.80	0.69	4.04	-0.05	-0.21
Overall	0.73	4.53	0.57	2.94	-0.32	-1.43

N.B The critical t-Value, i.e. t(18; 05) = 2.10 in all cases (see appendices II A - C for details).

As indicated in table 7 above, instructors' total teaching experience was correlated with each of their teaching behaviors under treatment using Spearman's rank difference coefficient of correlation. In all cases total teaching experience was positively correlated. Moderate positive correlations were found for 3 of the didactic elements, i.e. clarity of explanation, varying the stimulus, and student engagement and the use of student ideas (0.56, 0.64 and 0.57 respectively). The t-test computed for each of these teaching behaviors suggests that the relations between instructors' total teaching experience and the teaching behaviors under discussion were statistically significant. This implies that longer teaching experience was helpful for instructors' better employment of clarity of explanation, varying the stimulus, and student engagement and the use of student ideas.

Table 7 further shows that the relations between instructor' total teaching experience and their use of instructional sets, i.e. set induction and closure were positive, but weak (0.31 and 0.39 respectively). The relationships were not also statistically significant. This implies that longer teaching experience was not much helpful for effective employment of set induction and closure. Nonetheless, the relationship between instructors' total teaching experience and their overall employment of the didactic elements was quite high (0.73) and statistically significant. These findings provide sufficient ground to argue that longer teaching experience had positive contribution in the employment of the didactic elements of a lesson.

In addition to total teaching experience, instructors' teaching experience at the elementary school level was separately treated. This was done because, as indicated in chapter 3, it was assumed that teaching experience in elementary schools can have direct relevance to TTI program. The correlations were computed using the Point bi-serial correlation.

In all cases, positive correlations were found. The weakest correlation was observed in set induction (0.23), while the highest was seen in closure (0.57). The latter relation was statistically significant, whereas the former was not significant. This shows that teaching experience in elementary schools had not contributed much in the employment of set induction (similar with that of total teaching experience), but had contributed more to instructors' effective use of closure. It was found earlier that instructors' were ineffective in their use of the two instructional sets. The fact that teaching experience in elementary schools had positive contribution to instructors' effective use of closure, is thus valuable.

Finally, the relationship between instructors' teaching experience in elementary schools and their overall employment of the didactic elements of a

lesson was quite high (0.69), and statistically significant as well. Moreover, the correlations between this teaching experience and their clarity of explanation, varying the stimulus, and their student engagement techniques and the use of student ideas were about moderate (0.46, 0.42 and 0.44 respectively) and significant.

From the above findings, it can be said that longer teaching experience, be it total or at elementary school level, had positive contribution to the effectiveness of instructors in employing the didactic elements in general. This was specifically true for clarity of explanation, varying the stimulus, and student engagement as regards total teaching experience. Regarding teaching experience in elementary schools, longer teaching experience was more helpful to all of the teaching behaviors under treatment except set induction. In both cases (total teaching experience or teaching experience at the elementary school level), longer teaching experience was found to be a factor for the effectiveness or ineffectiveness of instructors' overall performance.

The other variable treated was instructors' qualification. To see whether there was any relationship between instructors' qualification and their teaching behaviors under discussion, the Point bi-serial correlation was employed. Table 7 indicates that qualification was inversely correlated with all of the teaching behaviors, i.e. the didactic elements as well as with instructors' overall performance. However, all the correlation values except that of set induction were very low and were not statistically significant.

Accordingly, the relationship between instructors' qualification and their use of set induction was inversely moderate (-0.46). The t-test computed also showed that the relationship was significant. As far as the rest of instructors' teaching behaviors and their overall employment of the didactic elements is concerned, the relationships were weak and were not significant. The

correlation values range from -0.0009 for clarity of explanation to -0.33 for student engagement and the use of student ideas.

But here, one important point needs to be made clear. It was seen earlier that longer teaching experience had positive contribution to instructors' use of the didactic elements of a lesson. Among those instructors who were less qualified, i.e. among those instructors whose qualification was either a college diploma or a TTI certificate (described earlier in chapter 3 as non-degree instructors to dichotomize the population), it was only one who had shorter teaching experience. The rest had longer teaching experience (appendix IV). The fact that qualification had inverse relation with instructors' use of the didactic elements thus might be due to the effect of teaching experience.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

The main purpose of the study was to investigate the extent to which TTI instructors in the Amhara region effectively employ the didactic elements of a lesson in the teaching-learning process. Accordingly, an attempt was made to identify,

- the techniques of set induction often employed by TTI instructors.
- the techniques instructors often employ to clarify their explanations.
- the stimulus varying techniques instructors often use.
- the techniques often employed by instructors to enhance student engagement and the use of student ideas; and,
- the techniques of closure often used by TTI instructors.

An attempt was also made to determine whether there exists any relationship between instructors' teaching behaviors under-treatment and their teaching experience and qualification.

To attain the objectives of the study indicated above, the following procedures were undertaken.

- An observation checklist (a rating format) was developed to secure the necessary information through systematic observation. Forty-six items were included in the checklist for the final observation.

- An expert judge was employed and a try-out study was made to check the validity and reliability of the data gathering instrument.
- Two observers (raters) who had good background in pedagogics were selected and trained with the help of a manual prepared by the researcher.
- All instructors of Dessie TTI (20 instructors) were used as source of information.
- Finally, results were presented and analysed using the mean, percentage system, spearman's rank difference correlation and the point bi-serial correlation. The analysis was made in line with relevant related research and literature. As a result of these research procedures, the following major findings were attained.

5.1.1 Set induction was least used by instructors. The mean scores of all instructors were low. The grand mean score of all instructors for set induction too was very low, only 1.54. It was only provision of overviews of previous lessons that was often employed by the majority of instructors (65%), whereas 6(30%) employed this sometimes. The remaining 7 techniques were never used by 65% - 95% of the instructors (Table 2).

5.1.2 Instructors' performance of both clarity of explanation and varying the stimulus was relatively good. The mean scores of 15(75%) and 16(80%) instructors for these didactic elements were high respectively. The grand mean scores of all instructors for these didactic elements were also high, 2.74 and 2.86 respectively (Tables 3 and 4).

5.1.3 Student engagement in the teaching-learning process and the use of student ideas was found to be one of the least used didactic elements by instructors. The mean scores of 15 instructors (75%) were low. The grand mean score of all instructors for this didactic element was only 2.06, which is by far below average (Table 5).

5.1.4 The analysis made in chapter four also shows that closure was the most forgotten didactic element. Accordingly all the mean scores of instructors for closure were very low. Stated from a different angle, all the mean scores for each item were very low, ranging from 1.00 - 1.80. Moreover, each of the techniques of closure was never employed by 45% - 100% of the instructors. As a result of this, the grand mean score of all instructors for closure remained the least, only 1.34(Table 6).

5.1.5 Teaching experience, be it total or at elementary school level, had positive correlation with all instructors' teaching behaviors under treatment including their overall performance. Moderately positive and statistically significant correlation were found for clarity of explanation, varying the stimulus, and student engagement and the use of student ideas as regards instructors' total teaching experience. Teaching experience at the elementary school level had positive correlations in all cases, but high and significant correlation was found for closure. In both cases, i.e. total teaching experience and teaching experience at the elementary school level, the correlations with instructors' overall performance were high and significant.

On the other hand, although weak and statistically insignificant, qualification was inversely correlated with all the didactic elements including instructors' overall performance. As indicated earlier in chapter four, this might have been the effect of teaching experience, because all the less qualified instructors except one had longer teaching experience (Table 7).

5.2 Conclusion

It was stated earlier that instructors performance of clarity of explanation and varying the stimulus was relatively good. Contrary to this, their performance in enhancing student engagement and the use of student ideas was poor. Clarity of explanation essentially represents instructors' direct behavior, where as student engagement and the use of student ideas basically reflects their indirect influence. It can, therefore, safely be said that TTI classrooms under study were instructor dominated.

Teaching experience had positive correlations with all of the didactic elements including instructors' overall performance. On the otherhand, though weak and insignificant, qualification was inversely correlated with all the didactic elements and instructors' overall performance as well. This implies that longer teaching experience was an important variable for instructors' effectiveness in employing the didactic elements.

Set induction and closure were least used by instructors. Thus, in general, when seen from the perspective of this study, TTI instructors in the region did not give due emphasis to the importance of including all the didactic elements in their lessons.

5.3 Recommendations

Based on the findings of the study and the conclusions reached, the following recommendations are suggested.

5.3.1 It was stated earlier that instructors' performance of the instructional sets,i.e. set induction and closure was poor. However, research findings revealed that setting the stage for learning and leaving the learners in a motivated state so as to continue the learning independently are important teaching behaviors for the effectiveness of classroom learning. Instructors might have forgotten to perform these teaching behaviors due to lack of appropriate awareness and conviction with regard to the nature and importance of instructional sets, or skill, or both. It will be necessary thus to help instructors to improve and update their pedagogical awareness and teaching skill through workshops, seminars, and the like. Formative follow - up by qualified supervisors to give appropriate guidance can also be helpful.

5.3.2 TTI classrooms in the region, as indicated earlier, were instructor dominated. This implies that the classrooms were characterized by a didactic pracitce that supports only over passive learners which ultimately leads to rote learning.

Instructors' dominant character might be the effect of the age old traditional conception and practice of teaching on the one hand, and lack of appropriate training on the other. Whatever, the cause might be, as emphatically stated in this study, prospective teachers tend to imitate their own teachers than to do what they were told to do through professional courses. Thus in order to prepare competent primary school teachers, their instructors

themselves need to have the competencies required of them to perform their teaching tasks in accordance with the modern conception of teaching. It will be important, therefore, to take into account this feedback and re-examine methodology courses in colleges and faculties which train instructors.

5.3.3 Teaching experience was found to be an important variable for instructors effectiveness in employing the didactic elements of a lesson. Due emphasis thus need to be given to teaching experience when selecting TTI instructors.

5.3.4 Finally, since this study was confined to the investigation of TTI instructors' employment of the didactic elements of a lesson in one region, interested researchers can take up this issue and investigate how these teaching behaviors are employed in the TTIs of other regions.

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Appendix I - Data Gathering Instrument

A) Observation Checklist

ADDIS ABABA UNIVERSITY

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND INSTRUCTION

OBSERVATION CHECKLIST

The purpose of this observation checklist is to obtain information on the extent to which T.T.I. instructors effectively employ the didactic elements of a lesson. The information secured through the observation checklist will be solely used for academic purpose. It is the hope of the researcher the information will be genuine.

Direction

1. Complete the following information before beginning the observation

I. Subject observed _____

II. Biodata of the instructor to be observed

a. Sex _____

b. Years of experience in teaching

in TTI _____

in elementary schools _____

in secondary schools _____

c. Qualification (put " √ " mark)

MA/MSC ____

BA/BSC ____

Diploma ___

Other/specify ____

2. Make the observation and the rating according to the guidelines given in the mannual

S.No.	01 (Set Induction)	Used 1 mark	Not Used X mark
1.1	Provides an overview of the previous lesson		
1.2	Asks questions from the students' general knowledge related to the day's lesson.		
1.3	Outlines the key points of the present lesson.		
1.4	Makes clear to students what is expected of them during the course of the lesson.		
1.5	Tells students why they should learn what he is teaching		
1.6	Relates the lesson to a topic of vital interest to the class.		
1.7	Presents challenging questions such as "What would happen if...?" to stimulate student curiosity.		
1.8	Uses explanatory models		
	02 (Clarity of Explanation)		
2.1	Avoids unnecessary technical terms and complex sentences		
2.2	Explains the meaning of new words		
2.3	Pronounces words distinctly		
2.4	Writes important things on the board while explaining		
2.5	Uses Visual materials for explanations		
2.6	Explains something and then stops so that students can think about it.		
2.7	Uses examples from local real life conditions		
2.8	Asks students to give examples.		

S.No.		Used 1 mark	Not Used X mark
2.9	Asks questions to findout if students understand what he has told them.		
2.10	Phrases questions precisely and explicitly.		
2.11	Explains his answers to student questions clearly.		
2.12	Shows students where they are wrong		
	03 (Varying the Stimulus)		
3.1	Focuses important points by way of verbal statements eg. "listen to this attentively" "Watch what happens when..."		
3.2	Focuses important points by way of eye-movements, facial expressions, body movements, etc.		
3.3	Changes his speech pattern (low-to-high tones)		
3.4	Uses different audio-visual materials (shifts sensory channels)		
3.5	Uses techniques such as eye-contact and walking toward noisy students to draw the attention of inattentive or mis-behaving students		
3.6	Moves form one corner to the other.		
3.7	Varies tasks and activities required of the students.		

S.No.	04 **Student Engagement in the Teaching-Learning process and Use of Student Ideas)**	Used 1 mark	Not Used X mark
4.1	Calls students by name to promote their involvement.		
4.2	Asks questions that require many possible responses.		
4.3	Gives clues to the answer of a question when a student could not give full correct answer.		
4.4	Directs questions to less participative students in a non-threatening way.		
4.5	Gives chance to other students to answer questions which are not answered by a student.		
4.6	Praises students' appropriate responses by giving remarks such as "Good".		
4.7	Acknowledge students' ideas by summarizing or repeating What they said		
4.8	Applies student ideas in analysing a point or a problem.		
4.9	Gives seat works that are not confusing and frustrating.		
4.10	Provides clear task directions and practice examples.		
4.11	Circulates the room to monitor progress and provide help.		
4.12	Keeps helping interactions brief		
4.13	Provides opportunities for feed back.		

S.No.	**05 (Closure)**	Use 1 mark	Not Used X mark
5.1	Summarizes the main points of a lesson at the end.		
5.2	Consolidates the lesson by raising questions at the end.		
5.3	Encourages and praises students to create a sense of achievement.		
5.4	Relates what has been done in the lesson to various other experiences of the students.		
5.5	Sets assignments and further reading tasks based on the lesson.		
5.6	Briefly describes what will happen in the next lesson in the subject.		

B) Rating Format

I. Subject Observed

S/No.	01 (Set Induction)	4	3	2	1
1.1	Provides on overview of the previous lesson				
1.2	Asks questions from the students', general knowledge related to the day's lesson.				
1.3	Out lines the key points of the present lesson.				
1.4	Makes clear to students what is expected of them during the course of the lesson.				
1.5	Tells students why they should learn what he is teaching.				
1.6	Relates the lesson to a topic of vital interest to the class.				
1.7	Presents challenging questions such as "what would happen if...?" to stimulate student curiosity.				
1.8	Uses explanatory models				
	02 (Clarity of Explanation)				
2.1	Avoids unnecessary technical terms and complex sentences.				
2.2	Explains the meaning of new words				
2.3	Pronounces words distinctly				
2.4	Writes important things on the board while explaining.				
2.5	Uses visual materials for explanations				

S/No.	01 (Set Induction)	4	3	2	1
2.6	Explains something and then stops so that students can think about it.				
2.7	Uses examples from local real life conditions.				
2.8	Asks students to give examples.				
2.9	Asks questions to find out if students understand what he has told them.				
2.10	Phrases questions precisely and explicitly				
2.11	Explains his answers to student questions clearly				
2.12	Shows students where they are wrong.				
	03 (Varying Stimulus)				
3.1	Focuses important points by way of verbal statements e.g. "listen to this attentively," "watch what happens when...?"				
3.2	Focuses important points by way of eye-movements, facial expressions, body movements, etc...				
3.3	Changes his speech pattern (low-to-high tones).				
3.4	Uses different audiovisual materials (shifts sensory channels).				
3.5	Uses techniques such as eye-content and walking toward noisy students to draw the attention of intentive or misbehaving students.				
3.6	Moves from one corner to the other.				
3.7	Varies tasks and activities required of the students				

S/No.		4	3	2	1
	04 (Student Engagement in the Teaching-Learning Process and Use of Student Ideas)				
4.1	Calls students by name to promote their involvement.				
4.2	Asks questions that require many possible responses				
4.3	Gives clues to the answer of a question when a student could not give full correct answer.				
4.4	Gives chance to other students to answer questions which are not answer by a student.				
4.5	Raises students' appropriate responses by giving remarks such as "Good".				
4.6	Acknowledges students' ideas by summarizing or repeating what they said.				
4.7	Applies student ideas in analysing a point or a problem				
4.8	Gives seat works that are not confusing and frustrating.				
4.9	Provides clear task directions and practice examples.				
4.10	Circulates the room to monitor progress and provide help.				
4.11	Keeps helping interactions brief.				
4.12	Provides opportunities for feed back.				

S/No.		4	3	2	1
	05 (Closure)				
5.1	Summarizes the main points of a lesson at the end.				
5.2	Consolidates the lesson by raising questions at the end.				
5.3	Encourages and praises students to create a sense of achievement.				
5.4	Relates what has been done in the lesson to various other experiences of the students.				
5.5	Sets assignments and further reading tasks based on the lesson.				
5.6	Briefly describes what will happen in the next lesson in the subject.				

C) Orientation Material for Observers

1. Introduction

The purpose of this mannual is to enable observers to obtain valid and reliable information for the research study entitled "A study on the Extent to which TTI Instructors Effectively Employ the Didactic Elements of a Lesson."

The manual provides information on two main issues. The first is concerned with the didactic elements of a lesson and the respected teaching activities. It is hoped this information will give the observers a clear picture of the nature of the didactic elements of a lesson and the required teaching activities in implementing them.

The second part provides guidelines on how to use the observation checklist and the rating format prepared for the purpose mentioned above.

2. The Didactic Elements of A Lesson and the Respected Teaching Activities.

It is contended that skillful implementation of the didactic elements of a lesson is crucial for effective teaching. The didactic elements of a lesson include set induction, lesson development (the main components of which are clarity of explanation, varying the stimulus, and student engagement in the teaching-learning process and use of students ideas) and closure.

2.1 Set Induction

The concept of set induction comes from research on learning. Research on classroom learning indicates that pre-instructional activities or sets of a learning task have influence upon the outcomes of that task. In most cases set induction consists of two parts: attention getter or motivator and advance organiser.

The main functions of a motivator are to get students' undivided attention and arouse their interest and curiosity so as to establish involvement in the forth coming lesson.

Teachers can use a variety of techniques to gain student attention and arouse their interest. Eg.

- Simply stand silently facing the class - soon the entire class will be drawn to the silence.
- Present a challenging question or problem to be solved.
- Relate the lesson to a topic of vital interest to the class, etc.

There is a common contention among educators that students learn more when they know what to expect from a lesson. This function is served by an advance organizer. Advance organizers facilitate the incorporation and retention of new information by providing an overview of the previous lesson and an outline of key ideas of the present lesson.

Providing an overview of the previous lesson, asking questions from the students' general knowledge related to the day's lesson, telling to students the objectives of the lesson in specific terms and outlining the key points of the present lesson are some of the activities that help to the effectiveness of advance organizers.

2.2 Clarity of Explanation

Empirical evidence suggests that clarity of explanation is an aspect of behavior which has considerable influence on the effectiveness of classroom teaching. Simplicity, explicitness and continuity are among factors which are important for effective explanation. It is recommended by authorities that teachers should not include too much information in one sentence and avoid the use of specialist or technical terms without explanation or definition of their meanings.

On the other hand, teacher's fluency is considered important, not only in discourse or explanation, but also in questioning. Questions of most effective teachers are phrased in such away that they can be answered without additional clarification. An other basic skill commonly used in clarity of explanation is the use of examples. Effective teaching of new concepts, relationships or principles largely depends on the teacher's ability to use examples and seek examples from pupils.

To be effective is his explanation, the teacher is required, among others, to:

- Use simple language within the pupil's normal vocabulary,
- Keep sentences short,
- explain the meaning of new words,
- teach one thing at a time,
- use examples from local real life conditions with which students are familiar,
- use visual materials for explanations,
- phrase questions preciselly and explicitly, etc.

2.3 Varying The Stimulus

A number of studies focused on the teacher's use of variability during the lesson. Stimulus variation refers to those teacher actions that develop and maintain a high level of attention on the part of the pupils during the course of the lesson. The purpose of this skill is to arouse pupils' attention to focus upon the content of the lesson.

There is a fear that increase in the frequency of stimulus variation can distract younger students from attending the content of a lesson. This reminds us that stimulus variation should not be random.

Some of the stimulus variation techniques suggested by authorities include the following.

- Changing the speech pattern (low-to-high tones).
- Focusing important points either by way of verbal statements.(e.g. "listen to this attentively") or specific gestures (eg. eye movements, facial expressions, body movements).
- Moving from one corner to the other (rather than being stand still).

. Using different Audio-visual materials.

2.4 Student Engagement in the Teaching-Learning Process and the Use of Student Ideas

The time students are actually engaged in learning the materials presented is termed by authorities as engagement rate or on - task behavior of students. Engagement rate is the percentage of time devoted to learning when the student is actually on task, with the instructional materials and activities presented. While a teacher can be task-oriented, providing maximum content coverage and communicating high expectation, the student may not be engaged all of this time. He may be mind absent or emotionally detached. Correcting such disengagement is one of the important tasks of the teacher.

It is foundout that both student engagement (time on-task rate) and student achievement gain are enhanced when teachers:

- give assignment that students can complete successfully if they invest reasonable effort in them (rather than assignments that are confusing and frustrating).
- provide clear task directions and practice examples.
- circulate the room to monitor progress and provide help once students begin to work independently; and,
- keep these helping interactions brief so as to be able to continue circulating.

An important teacher behavior strongly related to student engagement is the use of student ideas. The general principal supporting the use of praise and student ideas is that students tend to respond positively when credit is given for their idea. Some of the techniques of using. Student ideas include the following.

- Acknowledging a student's idea by repeating the nouns and logical connectives he has expressed.
- Modifying the idea by rephrasing or conceptualizing it in the teacher's own words.
- Applying the idea in analysing a point or a problem.
- Comparing the idea by drawing a relationship between it and ideas expressed earlier by the student or the teacher.

Research has shown that these ways of using student ideas are more strongly and consistently related to student engagement than a simple expression of approval, such as "Good".

2.5 Closure

Closure is a complement of set induction which draws the attention of students to the end of a specific learning sequence or of an entire lesson by focusing on key points that have been learned. Effective closure reinforces what has been learned by reviewing the key points of a lesson and relating them to other material pupils have already learned.

Effective Closure Can be Accomplished by:

. Summarizing the main points of a lesson at the end.
. Consolidating the lesson by raising questions at the end.
. Setting assignments and further reading tasks based on the lesson.
. Relating what has been done in the lesson to various other experiences of the students, etc.

Describing briefly what will happen in the next lesson in the subject is also important.

3. Guidelines on How to Use the Observations Checklist and the Rating Format

An observation checklist and a rating format for observing and rating the extent to which TTI instructors effectively employ the didactic elements of a lesson are prepared. Specific teacher behaviors or teaching activities that are expected to be performed by each instructor in the course of a lesson are spelled out in terms of descriptive statements. The same items are included both in the observation checklist and the rating format. The number of items in each of the didactic elements of a lesson is indicated in the table below.

Code	Didactic Element or Set	No. of Items
01	Set induction	8
02	Clarity of explanation	12
03	Varying the stimulus	7
04	Student engagement in the teaching-learning process and use of student ideas	
	Closure	13
05		6

The first task of the observer will be to be thoroughly familiar with the items in the observation checklist. To do this, you are required to have in your memory all the sets or elements indicated in the table above. Then, it will be necessary to read through the observation checklist at least three times before the actual observation. Have in your mind that set induction includes teaching activities which take place at the beginning of a lesson and that closure comes towards the end of the lesson. The remaining elements mostly occur in the middle of the lesson or period.

The above information will help the observer to be effective in observing the teaching activities and record tallies in the right or respected places. Whenever a teaching behavior or activity indicated in the observation checklist occurs, put a tally (√ mark) in the space provided. If a given teaching activity does not occur throughout an observation session, put "X" mark accordingly.

After completing three observations, each instructor will be rated on the basis of the frequency of accurence of each specific teaching behavior or activity. If a given specific instructor behavior occurs during all the three observation sessions, it will be rated "Often Used." If it occurs during two of the observation sessions, it will be rated "Sometimes Used", and "Rarely Used" if it occurs only during one observation period. If the specific behavior does not occur throughout the observation sessions, the rating will be "Never Used".

Thus, in the rating format,

4 Stands for "Often Used"

3 Stands for "Sometimes Used"

2 Stands for "Rarely Used"; and,

1 Stands for "Never Used"

Indicate your rating by putting "X" mark in the space provided under the appropriate number.

D) **Expert Judge Form**

ADDIS ABABA UNIVERSITY

FACULTY OF EDUCATION

CURRICULUM AND INSTRUCTION DEPARTMENT

Expert Judge Format

The purpose of this expert judge format is to assess the validity of the instrument prepared for studying TTI instructors' employment of the didactic elements of a lesson. Your jenuine judgement of each item is very much helpful for the success of the research project

Thank you for your cooperation

Direction

Your are required to make your judgement in terms of:

a) The clarity of each item (how much the item is stated clearly and precisely); and,

b) The relevance of each item to measure TTI instructors, behavior that should occur in employing the respected didactic element.

. Rate the item:

5 - if its clarity is very high

4 - if its clarity is high

3 - if its clarity is medium

2 - if its clarity is low

1 - if its clarity is very low

. Follow the same procedure to rate the relevance of the items.

. Indicate your rating by putting "√" mark in the appropriate space.

Item	Clarity					Relevance				
	5	4	3	2	1	5	4	3	2	1
2.1										
2.2										
2.3										
. .										
. . .										
5.8										

E. Correlation Coefficients of Raters in the Tryout

1. Amharic

Item	R1	R2	Item	R1	R2
1.1	4	4	3.7	4	4
1.2	4	4	4.1	4	4
1.3	1	2	4.2	2	3
1.4	3	2	4.3	2	2
1.5	2	2	4.4	3	2
1.6	1	2	4.5	3	3
1.7	1	1	4.6	3	3
1.8	2	2	4.7	1	2
1.9	2	3	4.8	1	1
2.1	4	4	4.9	1	1
2.2	3	3	4.10	1	1
2.3	4	4	4.11	2	2
2.4	4	4	4.12	1	1
2.5	3	3	4.13	1	1
2.6	3	3	4.14	1	2
2.7	4	3	5.1	3	3
2.8	4	4	5.2	1	1
2.9	4	4	5.3	1	1
2.10	4	4	5.4	1	1
2.11	4	3	5.5	1	2
2.12	2	3	5.6	2	2
2.13	1	1	5.7	3	3
2.14	2	2			
3.1	4	4			
3.2	4	4			
3.3	4	4			
3.4	2	2			
3.5	3	3			
3.6	4	4			

$n = 51$

$R_1 = 131$

$R_2 = 133$

$R_1R_2 = 398$

$R_1^2 = 401$

$R_2^2 = 407$

Then, by substituting these values in pearson product moment formula of correlation,

$$r = \frac{n(\Sigma R_1R_2) - (\Sigma R_1)(\Sigma R_2)}{\sqrt{[n(\Sigma R_1^2) - (\Sigma R1)^2][n(\Sigma R_2^2) - (\Sigma R_2)^2]}}$$

$r = 0.91$

N.B. R_1 and R_2 represent $Rater_1$ and $Rater_2$ respectively in all cases.

2. Physical Education

Item	R1	R2	Item	R1	R2
1.1	3	3	3.7	4	3
1.2	2	3	4.1	2	3
1.3	4	4	4.2	1	1
1.42	4	4	4.3	1	1
1.5	2	2	4.4	1	1
1.6	1	1	4.5	2	2
1.7	1	1	4.6	2	3
1.8	1	1	4.7	1	1
1.9	2	3	4.8	1	1
2.1	4	4	4.9	1	1
2.2	3	3	4.10	1	1
2.3	4	4	4.11	4	4
2.4	1	1	4.12	3	4
2.5	3	4	4.13	3	3
2.6	3	4	4.14	3	3
2.7	3	4	5.1	4	4
2.8	1	1	5.2	1	1
2.9	1	1	5.3	3	3
2.10	1	1	5.4	1	1
2.11	1	1	5.5	1	1
2.12	2	2	5.6	3	3
2.13	2	3	5.7	3	3
2.14	1	3			
3.1	2	3			
3.2	4	4			
3.3	4	4			
3.4	4	3			
3.5	1	2			
3.6	4	4			

$n = 51$

$\Sigma R_1 = 115$

$\Sigma R_2 = 126$

$\Sigma R_1 R_2 = 353$

$\Sigma R_1^2 = 331$

$\Sigma R_2^2 = 386$

Then, by substituting these values in the formula,

$$r = \frac{n(\Sigma R_1 R_2) - (\Sigma R_1)(\Sigma R_2)}{\sqrt{[n(\Sigma R_1^2) - (\Sigma R1)^2][n(\Sigma R_2^2) - (\Sigma R_2)^2]}}$$

$r = 0.94$

3. Psychology

Item	R1	R2	Item	R1	R2
1.1	2	2	3.7	1	1
1.2	1	1	4.1	1	1
1.3	1	1	4.2	1	1
1.4	1	1	4.3	1	1
1.5	1	1	4.4	1	1
1.6	2	3	4.5	1	1
1.7	1	1	4.6	1	2
1.8	1	1	4.7	1	1
1.9	1	1	4.8	1	1
2.1	4	4	4.9	1	1
2.2	4	4	4.10	1	1
2.3	4	4	4.11	3	3
2.4	4	4	4.12	1	2
2.5	1	1	4.13	1	1
2.6	4	3	4.14	1	1
2.7	4	4	5.1	4	4
2.8	3	3	5.2	1	1
2.9	1	1	5.3	1	1
2.10	2	2	5.4	4	4
2.11	2	2	5.5	2	2
2.12	3	2	5.6	2	1
2.13	2	3	5.7	1	2
2.14	1	1			
3.1	1	2			
3.2	2	3			
3.3	1	2			
3.4	1	2			
3.5	3	3			
3.6	3	4			

$n = 51$

$\Sigma R_1 = 93$ $\Sigma R_2 = 100$

$\Sigma R_1 R_2 = 241$

$\Sigma R_1^2 = 235$

$\Sigma R_2^2 = 260$

Then, by substituting these values in formula,

$$r = \frac{n(\Sigma R_1 R_2) - (\Sigma R_1)(\Sigma R_2)}{\sqrt{[n(\Sigma R_1^2) - (\Sigma R_1)^2][n(\Sigma R_2^2) - (\Sigma R_2)^2]}}$$

$r = 0.91$

Appendix II The Relationship Between Instructors' Employment of the Didactic Elements and Their Teaching Experience and Qualification.

A. The Relationship Between Instructors' Employment of the Didactic Elements of a Lesson and Their Total Teaching Experience.

Inst	O1		O2		O3		O4		O5		Overall	
	R_1	R_2	R_1	R_2	R_1	R_2	R_1	R_2	R_1	R_2	R_1	R_2
1	3	2	2.5	2	6	2	5	2	3	2	1.5	2
2	12.5	6	13.5	6	6	6	7.5	6	2	6	9	6
3	1	4	2.5	4	1.5	4	6	4	13.5	4	1.5	4
4	20	7	4	7	6	7	2	7	1	7	3	7
5	12.5	12	8	12	1.5	12	1	12	18	12	4	12
6	12.5	8	10.5	8	19.5	8	16.5	8	18	8	15.5	8
7	7.5	16.5	5	16.5	10.5	16.5	7.5	16.5	6.5	16.5	8	16.5
8	2	4	1	4	3.5	4	9	4	6.5	4	5	4
9	9	20	20	20	15.5	20	12	20	13.5	20	18	20
10	17.5	1	10.5	1	3.5	1	3.5	1	6.5	1	6	1
11	5	9.5	13.5	9.5	8.5	9.5	15	9.5	13.5	9.5	13	9.5
12	7.5	14	17.5	14	17	14	19	14	18	14	17	14
13	12.5	18	19	18	19.5	18	18	18	6.5	18	19.5	18
14	17.5	14	17.5	14	13	14	20	14	6.5	14	19.5	14
15	5	14	16	14	13	14	16.5	14	10.5	14	14	14
16	17.5	19	13.5	19	18	19	14	19	18	19	15.5	19
17	17.5	16.5	8	16.5	10.5	16.5	11	16.5	10.5	16.5	11	16.5
18	12.5	9.5	8	9.5	8.5	9.5	10	9.5	18	9.5	10	9.5
19	5	4	13.5	4	13	4	3,5	4	6,5	4	7	4
20	12.5	11	6	11	15.5	11	13	11	13,5	11	12	11

By Employing Spearman's coefficient of rank difference correlation

$$(P = \frac{1.6\Sigma d^2}{(N^2-1)}$$

and its subsequent test $(t = P\sqrt{\frac{N-2}{1-p^2}})$, the

following results are obtained

01. $P = 1-\frac{6(921.5)}{20(20^2-1)} = \underline{0.31}$ $\quad t = 0.31\sqrt{\frac{20-2}{1-(0.31)^2}} = \underline{1.38}$

02. $P = \frac{6(587)}{20(20^2-1} = \underline{0.56}$ $\quad t = .56\sqrt{\frac{20-2}{1-(0.56)^2}} = \underline{2.87}$

03 $p = 1-\frac{6(482)}{20(20^2-1)} = \underline{0.64}$ $\quad t = 0.64\sqrt{\frac{20-2}{1-(0.64)^2}} = \underline{3.53}$

04 $P = 1-\frac{6(566.75)}{20(20^2-1)} = \underline{0.57}$ $\quad t = 0.57\sqrt{\frac{20-2}{1-(0.57)^2}} = \underline{2.94}$

05 $P = 1-\frac{6(812.5)}{20(20^2-1)} = \underline{0.39}$ $\quad t = 0.39\sqrt{\frac{20-2}{1-(0.39)^2}} = \underline{1.80}$

Overall. $P = 1\ \frac{6(360.5)}{20(20^2-1)} = \underline{0.73}$ $\quad t = 0.73\sqrt{\frac{20-2}{1-(0.73)^2}} = \underline{4.53}$

The critical t - value, i.e. t(18;05) = 2.10

B) The Relationship Between Instructors Employment of the Didactic Elements of a Lesson and Their Teaching Experience in Elementary Schools.

Inst	01	TE	02	TE	03	TE	04	TE	05	TE	Over all	TE
1	16	1	40	1	22	1	34	1	10	1	122	1
2	11	1	31	1	22	1	30	1	11	1	103	1
3	19	1	40	1	25	1	31	1	7	1	122	1
4	8	1	39	1	22	1	40	1	12	1	121	1
5	11	0	35	0	25	0	43	0	6	0	120	0
6	11	0	33	0	15	0	19	0	6	0	84	0
7	13	1	37	1	20	1	30	1	9	1	109	1
8	17	1	41	1	23	1	29	1	9	1	119	1
9	12	0	20	0	18	0	23	0	7	0	80	0
10	10	1	33	1	23	1	37	1	9	1	112	1
11	14	0	31	0	21	0	20	0	7	0	92	0
12	13	0	28	0	17	0	17	0	6	0	81	0
13	11	1	26	1	15	1	18	1	9	1	79	1
14	10	0	28	0	19	0	13	0	9	0	79	0
15	14	0	29	0	19	0	19	0	8	0	89	0
16	10	0	31	0	16	0	21	0	6	0	84	0
17	10	0	35	0	20	0	24	0	8	0	97	0
18	11	0	35	0	21	0	28	0	6	0	101	0
19	14	0	31	0	19	0	37	0	9	0	110	0
20	11	0	36	0	18	0	22	0	7	0	94	0

N.B. 1 and 0 represent instructors who have taught in elementary schools and who have not taught respectively.

Using the Point Biserial Correlation ($r = \frac{\bar{X}_p - \bar{X}_q}{S}\sqrt{pq}$) and the subsequent text ($t = r\sqrt{\frac{N-2}{1-r^2}}$),the following results are obtained.

01

Standard deviation of 01 = 2.65.

Mean score of 01 for 1 = 13.23.

Mean score of 01 for 0 = 11.75.

The proportion of 1 (p) = 0.40 The proportion of 0 (q) = 0.60

$$r = \frac{13.23 - 11.75}{2.65}\sqrt{0.40 \times 0.60} = \underline{\underline{0.23}}$$

$$t = 0.23\sqrt{\frac{20-2}{1-(0.23)^2}} = 1.00$$

02

Standard deviation of 02 = 5.17

Mean score of 02 for 2 = 35.88

Mean score of 02 for 0 - 31.00

The proportion of 1 = 0.40

The proportion of 0 = 0.60

$$r = \frac{35.88 - 31}{5.17}\sqrt{0.40 \times 0.60} = \underline{\underline{0.45}}$$

$$t = 0.46\sqrt{\frac{20-2}{1-(0.46)^2}} = \underline{\underline{2.20}}$$

03

Standard deviation = 2.90

Man score of 03 for 1 = 21.5

Mean score of 03 for 0 = 19

The proportion of 1 = 0.40

The proportion of 0 = 0.60

$$r = \frac{21.5 - 19}{2.90} \sqrt{0.40 \times 0.60} = 0.42$$

$$t = 0.42 \sqrt{\frac{20 - 2}{1-(0.42)^2}} = 1.96$$

04

Standard deviation = 8.22

Mean score of 04 for 2 = 31.13

Mean score of 04 for 0 = 23.80

The proportion of 01 = 0.40

The proportion of 0 = 0.60

$$r = \frac{31.13 - 23.80}{8.22} \sqrt{0.40 \times 0.60} = 0.44$$

$$t = 0.44 \sqrt{\frac{20 - 2}{1-(0.44)^2}} = 2.09$$

05

Standard deviation = 1.71

Mean score of 05 for 1 = 9.50

Mean score of 05 for 0 = 7.08

The proportion of 1 = 0.40

The proportion of 0 = 0.60

$$r = \frac{9.50 - 7.08}{1.71} \sqrt{0.40 \times 0.60} = 0.69$$

$$t = 0.69 \sqrt{\frac{20.2}{1-(0.69)^2}} = 4.04$$

Overall

Standard deviation = 15.64

Mean score of overall for 1 = 110.88

Mean score of overall for 0 = 92.58

The proportion of 11 = 0.40

The proportion of 0.0.60

$$r = \frac{110.88 - 92.58}{15.64} \sqrt{0.40 \times 0.60} = \underline{0.57}$$

$$t = 0.57 \sqrt{\frac{20 - 2}{1-(0.57)^2}} = \underline{2.94}$$

The critical t-value, i.e. t(18;05) = 2.10

C) **The Relationship Between Instructors Employment of the Didactic Elements of a Lesson and Their Qualification.**

Inst	01	Q	02	Q	03	Q	04	Q	05	Q	Over all	Q
1	16	1	40	1	22	1	34	1	10	1	122	1
2	11	1	31	1	22	1	30	1	11	1	103	1
3	19	0	40	0	25	0	31	0	7	0	122	0
4	8	1	39	1	22	1	40	1	12	1	121	1
5	11	1	35	1	25	1	43	1	6	1	120	1
6	11	1	33	1	15	1	19	1	6	1	84	1
7	13	1	37	1	20	1	30	1	9	1	109	1
8	17	0	41	0	23	0	29	0	9	0	119	0
9	12	0	20	0	18	0	23	0	7	0	80	0
10	10	0	33	0	23	0	37	0	9	0	112	0
11	14	1	31	1	21	1	20	1	7	1	92	1
12	13	1	28	1	17	1	17	1	6	1	81	1
13	11	1	26	1	15	1	18	1	9	1	79	1
14	10	1	28	1	19	1	13	1	9	1	79	1
15	14	1	29	1	19	1	19	1	8	1	89	1
16	10	1	31	1	16	1	21	1	6	1	84	1
17	10	1	35	1	20	1	24	1	8	1	97	1
18	11	1	35	1	21	1	28	1	6	1	101	1
19	14	0	31	0	19	0	37	0	9	0	110	0
20	11	1	36	1	18	1	22	1	7	1	94	1

N.B 1 and 0 represent instructors who have degree and those who have no degree respectively.

Using the point Biserial correlation ($r = \frac{\bar{X}p - \bar{X}q}{S}\sqrt{pq}$), and the subsequent test ($t = r\sqrt{\frac{N-2}{1-r2}}$), the following results are obtained.

01

Standard deviation of 01 = 12.3

Mean score of degree instructors = 11.60

Mean score of 01 for non-degree instructors = 14.40

Proportion of degree instructors (P) = 0.75

Proportion of non- degree instructors (q) = 0.25

$$r = \frac{11.60 - 14.40}{2.65}\sqrt{0.75 \times 0.25} = \underline{\underline{0.46}}$$

$$t = -0.46\sqrt{\frac{20-2}{1-(-0.46)^2}} = \underline{\underline{-2.20}}$$

02

Standard deviation of 0.2 = 32.95

Mean score of 02 for degree instructors = 32.93

Mean score of 02 for non-degree instructors = 33

Proportion of degree instructors = 0.75

Proportion of non-degree instructors = 225

$$r = \frac{32.93 - 33.00}{32.95}\sqrt{0.75 \times 0.25} = \underline{\underline{-0.0009}}$$

$$t = -0.0009\sqrt{\frac{20-2}{1-(-0.0009)^2}} = \underline{\underline{-0.016}}$$

03

Standard deviation of 03 = 2.90

Mean score of 03 for degree instructors = 19.47

Mean score of 03 for non-degree instructors = 21.60

Proportion of degree instructors = 0.75

Proportion of non-degree instructors = 0.25

$$r = \frac{19.47 - 21.60}{2.90} \sqrt{0.75 \times 0.25} = \underline{0.32}$$

$$t = -0.32 \sqrt{\frac{20 - 2}{1-(-00.32)}} = \underline{-1.43}$$

04

Standard deviation of 04 = 8.22

Mean score of 04 for degree instructors = 25.20

Mean score of 04 for non-degree instructors = 31.40

Proportion of degree instructors = 0.75

Proportion of non-degree instructors = 0.25

$$r = \frac{25.20 - 31.40}{8.22} \sqrt{0.75 \times 0.25} = \underline{-0.33}$$

$$t = -0.33 \sqrt{\frac{20 - 2}{1-(-0.33)^2}} = \underline{-1.48}$$

05

Standard deviation of 05 = 1.75

Mean score of 05 for degree instructors = 8

Mean score of 05 for non-degree instructors = 8.2

Proportion of degree instructors = 0.75

Proportion of non-degree instructors = 0.25

$$r = \frac{8 - 8.2}{1.75} \sqrt{0.75 \times 0.25} = \underline{-0.05}$$

$$t = -0.05 \sqrt{\frac{20 - 2}{1-(-0.05)^2}} = \underline{-0.21}$$

Overall

Standard deviation = 15.64

Mean score of degree instructors = 97.20

Mean score of non-degree instructors = 108.60

Proportion of degree instructors = 0.75

Proportion of non-degree instructors = 0.25

$$r = \frac{97.02 - 108.60}{15.64} \sqrt{0.75 \times 0.25} = \underline{\underline{-0.32}}$$

$$t = -0.32 \sqrt{\frac{20.2}{1-(-0.32)^2}} = \underline{\underline{-1.43}}$$

The critical t - value, i.e. t(18;05) = 2.10

Appendix III - Scores of Instructors in Employing the Didactic Elements

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.1	4	3	4	1	4	4	4	4	3	3	4	4	4	3	4	3	3	4	4	4
1.2	3	2	2	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	2	1
1.3	3	1	2	1	1	1	1	1	3	1	4	3	1	1	2	1	1	1	3	1
1.4	1	1	2	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
1.5	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
1.6	1	1	3	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
1.7	2	1	2	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1
1.8	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Σ	16	11	19	8	11	11	13	17	12	10	14	13	11	10	14	10	10	11	14	11
X̄	2	1.38	2.37	1.0	1.38	1.38	1.63	2.13	1.5	1.25	1.75	1.63	1.38	1.25	1.75	1.25	1.25	1.38	1.75	1.38
2.1	4	4	4	4	4	4	3	4	2	4	4	4	4	4	4	4	4	4	4	4
2.2	4	3	4	3	4	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4
2.3	4	4	4	4	4	4	4	4	3	4	4	4	3	4	4	3	4	4	4	4
2.4	4	2	4	4	4	1	3	2	2	1	4	3	4	4	4	4	1	1	4	3
2.5	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	3	1	1	4
2.6	4	4	4	4	4	4	4	4	2	4	4	4	3	4	4	4	3	4	4	4
2.7	4	3	3	2	1	4	4	4	1	3	4	2	1	1	1	1	2	4	1	3
2.8	2	2	2	1	1	1	2	4	1	1	1	1	1	1	1	1	2	1	1	2
2.9	4	3	4	4	2	2	4	4	1	2	1	2	1	1	1	2	4	4	1	4
2.10	4	2	4	4	4	2	4	4	1	4	2	2	2	1	1	2	4	3	1	1
2.11	3	1	2	4	3	3	2	3	1	2	1	1	1	2	2	3	2	2	3	1
2.12	2	2	3	4	3	2	2	3	1	3	1	1	2	1	2	2	2	3	3	2
Σ	40	31	40	37	35	33	37	41	20	33	34	28	26	28	29	31	31	31	31	36
X̄	3.33	2.58	3.33	3.21	2.92	2.75	3.08	3.42	1.67	2.75	2.58	2.33	2.17	2.33	2.42	2.58	2.58	2.58	2.58	3.0
3.1	4	2	4	2	4	1	1	2	1	4	4	1	1	1	1	1	2	2	1	1
3.2	4	4	4	4	4	2	4	4	4	4	4	4	3	4	4	4	4	4	4	3
3.3	4	4	4	4	1	4	4	4	4	4	4	4	3	4	4	3	4	4	4	2
3.4	1	1	4	1	4	1	1	1	1	1	1	1	1	1	1	1	3	3	1	1
3.5	4	4	4	3	4	3	4	4	4	4	4	3	3	4	4	3	2	2	4	3
3.6	4	4	4	4	4	3	4	4	3	4	3	3	3	4	4	3	2	2	2	4
3.7	1	3	1	4	4	1	2	4	1	2	1	1	1	1	1	1	3	4	3	4
Σ	22	22	25	22	25	15	20	23	18	23	21	17	15	19	19	16	20	21	19	18
X̄	3.14	3.14	3.57	3.14	3.57	2.14	2.86	3.29	2.57	3.29	3.0	2.43	2.14	2.71	2.71	2.29	2.86	3.0	2.71	2.57
4.1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1
4.2	4	4	4	3	4	3	3	4	3	4	1	2	1	1	3	3	1	1	4	3
4.3	4	2	4	3	3	1	4	1	2	4	1	2	2	1	2	4	2	4	4	3
4.4	4	4	2	1	2	1	2	3	1	2	3	1	3	1	2	3	2	3	2	1
4.5	4	4	4	2	4	2	3	4	3	4	3	2	3	1	2	2	4	4	4	4
4.6	4	4	4	4	4	2	4	4	2	4	3	1	1	1	2	1	3	4	4	3
4.7	4	3	4	3	3	2	4	4	2	4	2	2	1	1	1	1	3	3	4	1
4.8	4	3	3	3	3	2	4	3	4	4	1	1	1	1	1	1	1	2	2	1
4.9	1	1	1	4	4	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1
4.10	1	1	1	4	3	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1
4.11	1	1	1	4	4	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1
4.12	1	1	1	4	4	1	1	1	1	2	1	1	1	1	1	1	1	1	3	1
4.13	1	1	1	4	3	1	1	1	1	2	1	1	1	1	1	1	1	1	3	1
Σ	34	30	31	40	43	19	36	29	23	37	20	17	18	13	19	21	24	28	32	22
X̄	2.62	2.31	2.38	3.08	3.31	1.46	2.31	2.23	1.77	2.81	1.54	1.31	1.38	1.0	1.46	1.62	1.85	2.15	2.81	1.69
5.1	2	3	1	1	1	1	3	3	1	1	2	1	3	3	2	1	3	1	1	1
5.2	1	3	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
5.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5.5	2	1	1	4	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	2
5.6	3	2	2	4	1	1	2	1	2	3	1	1	2	2	2	1	1	1	3	1
Σ	10	11	7	12	6	6	9	8	7	9	7	6	9	8	8	6	8	6	9	7
X̄	1.67	1.83	1.17	2.0	1.0	1.0	1.5	1.5	1.17	1.5	1.17	1.0	1.5	1.5	1.33	1.0	1.33	1.0	1.5	1.67

Appendix IV Biodata of Instructors Observed

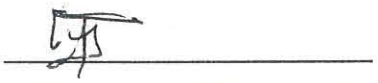
Inst	Qualification	Years of Experience in Teaching			Total
		T.T.I	Elementary School	Secondary School	
1	MA	4	1	17	22
2	BA	8	4	5	17
3	11+1	14	2	2	18
4	BA	10	5	-	15
5	BA	2	-	8	10
6	BA	11	-	2	13
7	BA	6	2	1	9
8	11+1	6	7	5	18
9	12+2	2	-	1	3
10	12+2	11	10	2	23
11	BA	5	-	7	12
12	BA	8	-	2	10
13	MA	2	3	3	8
14	BA	8	-	2	10
15	BA	5	-	5	10
16	MA	2	-	4	6
17	BA	1	-	8	9
18	BA	10	-	2	12
19	12+2	15	-	3	18
20	BA	10	-	1	11

N.B. All instructors are male.

DECLARATION

I, the undersigned, declare that this thesis is my work and that all sources of materials used for the thesis have been duly acknowledged.

Name: Hussen Eshetu

Signature 

Place and Date of Submission

Addis Ababa University

June 1998

This Thesis has been Submitted for Examination With my Approval as a University Advisor

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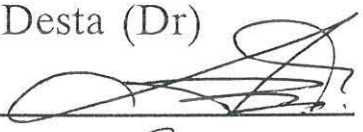
Signature 

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