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Effectiveness of Summer Upgrading Teachers' Education Program of Primary Schools in Tigray Regional State

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Abstract

Effectiveness of teachers is important in maintaining quality of education and achievement of goal of schooling. To this effect, teachers are being upgraded through summer in-service program. Therefore, the purpose of this study was to evaluate the effectiveness of the in-service teachers upgrading program in Tigray Regional State. Cross sectional survey design and a combination of quantitative and qualitative methods were used. 514 upgraded teachers, 80 from school principals; parents and other school communities with an emphasis on PTsAs; leaders and teachers from CTEs; experts from selected woreda education offices and from Regional State Education Bureau Teacher Development Program and experts from the Teacher Education and Leadership Directorate of the Federal Ministry of Education; and 194 class observations were considered as sources of data. The data were collected by using a questionnaire survey, interview, documents analyses and class observation. Data were analyzed by using descriptive statistics, narrations by using excerpts, and cross referencing. The results depicted that the prime objective of capacitating teachers in their subject knowledge mastery has been successfully achieved through the summer upgrading program. But the neglect shown at the commencement of the program towards the professional (pedagogical training part) has negatively influenced the implementation and outcome of the program. The upgrading program for teachers' capacity was in short sight for not including school principals. School governance has been found a stumbling block for upgraded teachers to experiment and innovate back in their schools after upgrading.

Keywords: Teacher upgrading; effectiveness.

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1. Introduction

Teacher education policy and implementation are open to debate, with contending directives that are subject to several traits that need to be addressed [1]. In an attempt to impact teacher education several reforms have been undertaken in different places with varying extents. The authors in [2] present four major traditions in teacher education reform: the academic, social efficiency, developmental and social reconstruction. Others approach teacher education in another perspective. Determination of what teachers are supposed to know and be able to do have driven the different approaches to examine teacher education outcomes over the past decades [3]. In Ethiopia several reforms have taken place, but the directives, extents and methodological approaches are still debatable. Even recently reform is being undertaken. Ethiopian teacher education is characterized as a terrain of persistent contradictions, challenges, and chaos, engrossed in and obsessed with the rhetoric of system overhaul and reform [4].

According to authors in [5] teacher education institutions structure their provision of opportunities to learn (OTL) in a way that is consistent with their particular philosophy of what teachers need to know and be able to do. The need to increase teachers' content knowledge is one of the dominant ideas that have guided reform efforts in many countries over the past decades [6]. Author [7] proposes four key themes reflecting the assumptions which have driven teacher education reforms over the past century: Attributes, Effectiveness, Knowledge and Outcomes. More recently also teacher-education research and research on practicing teachers has started to focus on the content-related base of teachers' classroom practice [3]. This study anticipates to investigate the effectiveness of the summer upgrading teacher education program.

The issue of teachers and their professional development including effectiveness has received an increasingly overwhelming attention by many stakeholders as teachers are important by their own and the role they play in advancing educational reform causes, more pronouncedly remarked by UNESCO's publication as teachers are both "the subjects and the objects of change" [8].

Effectiveness is treated in several directives and variables of interest. Among the many varying perspectives some treat effectiveness in terms of international competitiveness in such studies as teacher education development studies (TEDS), Program in international student assessment (PISA) and trends in mathematics and science studies (TIMSS). In this perspective of international competitiveness, effectiveness is considered in terms of what a nation accomplishes as a whole—and differences in the structure of teacher-education systems between countries represented a function of differences in their educational policy. Others also treat in terms of program types.

The effectiveness of an intervention such as the summer in-service upgrading program is determined by improvement to the overall capacity of teachers to support delivery in schools and to enhance the academic achievement of students. Assessing effectiveness involves examining the extent to which the upgrading program objectives were achieved, taking into account their relative importance and success in mitigating the problems that affect the quality of education. The reflections of upgraded teachers and the services provided both at colleges of teacher educations (CTEs) and in schools, are among the pillars that need to be examined when

measuring effectiveness. The efficacy of the upgrading program especially in terms of students' academic achievement, are also important to be considered to measure effectiveness.

Based on the foundation for the program design of the in-service teachers' upgrading GEQIP I (2008/09 – 2012/13), one of the goals was to improve the pedagogical knowledge and capacity of teachers through In-Service Programmes. As a consequence, the new framework for primary teacher education also anticipated the same with addition of overall competence of teachers to be able to know what they teach and how they teach - hence the primary school teachers upgrading program that was offered in summer time in the Tigray regional state.

1.1 Statement of the Problem

Several reports highlight that quality of education is at stake in Ethiopia. One of the manifestations of poor quality is the unsatisfactory teacher education/preparation. The Ministry of Education [9] embarked on improving the quality of general education through its General Education Quality Improvement Program (GEQIP I: 2008 and GEQIP II: 2012) and highlighted the milestones stated in the Education Sector Development Programs (ESDPs: I – V: 2015/16 – 2019/20) – primary school teacher education being one focus area. Although one of the goals of general education is 'to improve [the] quality of general education in order to motivate children to complete primary and secondary schools and provide them with the knowledge, skills and values to become productive and responsible citizens' [10], the intended improvement in the quality of learning and education in the general education program has not yet been achieved. This is substantiated by studies such as the National Learning Assessment and the Early Grade Reading Assessment that do not show remarkable improvements in students' academic achievement (NLA 2008; NEAEA 2013; EGRA, 2014). One of the factors that researcher in [11] noted was teacher-related variables. In other words, to improve the quality of learning and teaching teachers should actively extend their knowledge and skills not only in the areas of their specialization but also their general teaching skills that ultimately must prove to bring better student academic achievement and learning outcomes.

Furthermore, authors in [12, 13] have pointed out that teachers are one of the most important factors in raising student achievement. It is widely acknowledged that the most important factor is the quality of teachers and teaching [14]. In addition, various areas of education research highlight the importance of teacher learning about student thinking in promoting student-centered instruction [15]. Hence, higher standards for teachers must accompany the push for higher standards for students. To this end there is a need to professionalize teachers that stems from the fact that one needs to be distinguished *as a teacher*. The belief that disciplinary knowledge automatically results in pedagogical excellence is too simplistic. Thus the need for an in-service teacher education program geared towards developing teachers' subject matter mastery *and* pedagogical skills was considered pressing, which author in [16] coined as pedagogical content knowledge (PCK) and one of the milestones of the Curriculum Framework for primary teacher education [14].

Notwithstanding the aforementioned, the Tigray Regional State education bureau has embarked the summer in-service upgrading program that was introduced in 2009/10 (2002 E.C.) with the view that the upgraded teachers

will be able to mitigate some of the manifested quality problems and help in improving quality of education. Consequently, a significant number of teachers have been upgraded from a certificate to a diploma. In Tigray regional state, the Regional Education Bureau in deploying its massive upgrading strategy for 1st and 2nd cycle teachers starting from 2009/10 (2002 E.C), has trained more than 10,000 teachers to a diploma level through the summer in-service upgrading program. Despite this number of upgraded teachers, achievement of the intended objectives of the program need to be investigated as there are perceived problems, either in the program and its implementation, in the setting of the colleges for teacher education (CTEs), or in the school system, the capacities of the teachers themselves, other school related factors, or the student body, as evidences suggest that students' academic achievement remains behind expectations as presented in the studies EGRA (2016) and NEAEA (2012) [17]. Thus, this study addressed the effectiveness of the summer in-service upgrading program in terms of program design, implementation and in meeting its intended goals.

1.2 Objectives of the Study

This study was intended to investigate the overall effectiveness of the summer in-service primary school teacher upgrading program (from certificate to diploma), and more specifically, the program's effectiveness in Tigray regional state and the impact it has had in school improvements in terms of teacher competence and overall student achievement. Thus, the study focused on the gains of teachers with respect to a number of variables and the consequential improvements in students' academic achievement. With this intent the study tried to address the following specific objectives:

- To assess the effectiveness of the summer in-service upgrading program with respect to the professional development needs of teachers;
- To assess the teaching and learning practices of the upgraded teachers in relation to the teaching of course content, teaching methods and assessment practices;

Based on the objectives stated above this study tries to answer the following basic questions.

- To what extent has the summer in-service upgrading program been effective in developing the professional needs of teachers?
- To what extent are the upgraded teachers effective in their teaching of course content, teaching methods and assessment practices?

2. Conceptual Framework

Though there could be several issues that account for the effectiveness and efficiency of teachers, capacity building is expected to add to the value as an important input through the opportunity it brings in terms of the professional competence of teachers. Despite this common intention, different scholars have proposed varying methods, systems and models to ensure proper professional development and teacher competence. Authors in [18,19] in their successive studies asserted that although many pre-service (in-service) programs are based on particular views of what constitutes an effective teacher, there is no single unifying theory of teacher education. Different authors have outlined teachers' professional competence and effectiveness differently. Some

researchers such as in [20] describe that competence corresponds to a combination of interrelated cognitive and practical skills, knowledge and personal qualities, such as motivation, values and ethics, attitudes and emotions. [21] states that attitudes and beliefs are important concepts in understanding teachers' thought processes, classroom practices, changes, and learning to teach. Author in [22] also stated that changes in beliefs are associated with increased reflection and autonomy on the part of the teacher, and are hence also the outcome of teaching innovations. Scholars such as in [16] stress pedagogical content knowledge: an amalgam of content and pedagogy for teachers to be effective. Strengthening these views, teachers' beliefs about pedagogy are closely interwoven with their beliefs about the ways in which their students learn [23]. In its entirety, there seems to exist a general consensus that education, and teachers in particular, have an important role to play by imparting knowledge and skills, as well as by acting as models for the young. But there is a gap between the theoretical preparation of teachers and the requirements for the 'new' skills in practice [24]. From these insights, it is easily understood that the approach chosen to teach a certain concept, the way one looks at required pedagogical and other forms of knowledge, including the design of teacher education, are subject to personal beliefs that guide practice. In addition, the curricula with which future teachers are taught, and the alignment of the curricular contents to the level they will teach, are significant predictors of the professional competence of the future teacher. Apart from these curricular issues, the change in discourse reflected by trained teachers through the change in their views on the role of teaching, teachers' beliefs, the practice of teachers and, as a cause, the organisation where teacher education programs take place are critical in assessing the effectiveness of teachers' professional development. In view of addressing these issues in relation to the summer in-service upgrading program in Tigray region, there is no unified theory that can guide the assessment, but the following conceptual framework has been developed to help mitigate associated problems and focus the study approach. In this study, stakeholders for the enhancement of effectiveness of teachers are considered to include teachers themselves, learners, PTSA/KET and experts from the Regional Education Bureau (REB) and MoE. These stakeholders are seen as sources of information, while the summer in-service upgrading program is seen as the intervention for change in upgrading the professional competence of teachers in order to affect their reflections, beliefs, practices, etc.; something that is ultimately necessary in order to enhance student learning and achievement. With these views, the following conceptual framework was developed to study the effectiveness of the summer in-service upgrading program.

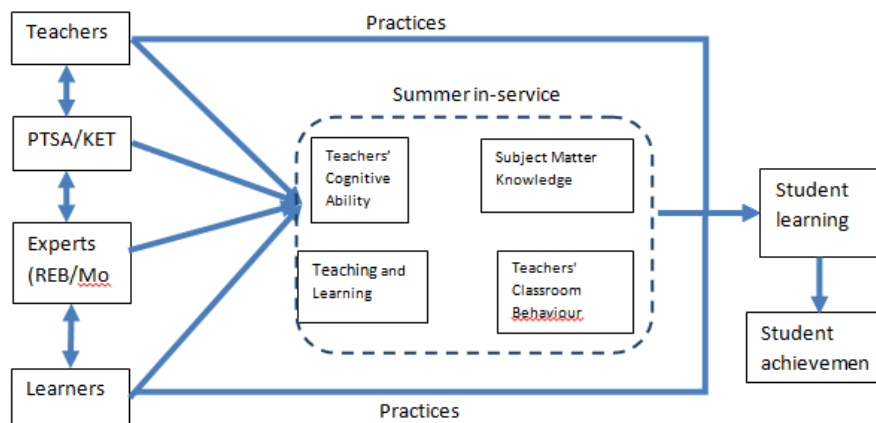


Figure 1: Conceptual framework

The relationship between the stakeholders in Figure1 reflects the fact that they have a direct influence on the quality of the summer in-service upgrading program. The summer in-service upgrading program encompasses building teachers' cognitive abilities, their subject matter knowledge, improving their classroom behaviour, and generally enhancing teaching and learning practices, in order to positively impact student learning. The interaction between the learners and REB/MoE experts describes student achievement as one of the indicators for policy reforms at the ministry level. The MoE and REB experts learn from the upgraded teachers' performance in the schools and classrooms were used as source where teachers, principals, PTAs are the first hand sources of information. On top of these, the upgraded teachers' teaching and learning practices were observed, which reflected how effective the upgrading program was to influence teachers' practices. In addition, each stakeholder's reflections that had a direct influence on the summer in-service upgrading program to enhance the competence of teacher performance were also addressed. These in turn were considered to improve student learning and their achievement as output and outcome indicators. Ultimately the in-service upgrading program is considered as intervention and practice as a consequential effect of the intervention – in this case the upgrading program. Students learning outcomes/achievement are end results of the joint effect of the upgrading program and teachers practices in schools.

In view of the above claims, the conceptual framework was employed as a foundational base for this study in examining and explaining how and why student achievement is declining over time, while teachers' profile is being upgraded through the summer in-service upgrading program. The potential trigger factors have been viewed as an amalgam of multiple CTE level or school level factors. Thus the conceptual framework was employed in this study with the belief that it would also enable the research to unravel the factors underpinning the current status-quo of student achievements as related to the teacher upgrading program thereby reflecting on the effectiveness of the program.

3. Research Method and Design

As the intention of this study was to investigate the overall effectiveness of the summer in-service primary school teacher upgrading program, it entailed the investigation of an ongoing teacher education program and looking into the practice of graduates of the program at school level. To this end, this evaluation was conducted using a combination of quantitative and qualitative methods.

A study design serves as a plan that guides the researcher in connecting the empirical data to a study's initial research questions and eventually to the answers of the questions set [25]. Survey method should be efficient to measure many variables at a specific time. Thus this study employed a cross-sectional survey study design, as the study was conducted in a specified time and space and enabled the collection of the required data. In addition, a survey was used to collect data as surveys typically take the form of self-administered questionnaires and interviews. In addition, this study uncovers the effectiveness of the summer in-service upgrading program and recommends future reforms hence it is an exploratory study. Finally, this study attempts to provide both quantitative and qualitative interpretations of the effectiveness of the program. Therefore, an exploratory mixed methods survey design was adopted.

3.1 Study Site

This study was conducted to investigate the effectiveness of teacher education in Tigray. Hence schools found in Tigray's seven zonal administrations, and the two colleges of teacher education in Tigray have been the study sites.

3.2 Data Sources

The study collected data from different education sectors and individuals with relevant information. These included: teachers who had been upgraded from certificate to diploma level through the summer in-service upgrading program and who were currently teaching in different elementary schools in Tigray regional state; sample of elementary school principals; parents and other school communities with an emphasis on PTSAs; leaders and teachers from the CTEs; experts from selected woreda education offices and from the Tigray Regional State Education Bureau Teacher Development Program, and experts from the Teacher Education and Leadership Directorate of the Federal Ministry of Education have been used as primary sources of data. Policies, strategies, monitoring reports, training manuals, statistical abstracts, and direct data obtained from the bureau of education have been used as secondary sources.

3.3 Sample and Sampling Techniques

There are different ways to identify respondents/participants in a mixed research design, depending on the type of research approach, the paradigm and the research question. Author in [26] has remarked that identifying participants for qualitative research depends upon the 'richness of information' participants are equipped with, while identifying respondents for quantitative research depends upon the nature of the business and purpose of the study. In gathering qualitative data, the size of the sample depends 'on what you want to find out, why you want to find it out, how the findings will be used and what resources (including time) you have for the study' [27]. But when considering survey, it is crucial to determine an appropriate and representative sample size to ensure acceptable data collection. To this effect, using the minimum sample size formula for simple random sampling

$$n \geq \frac{z_{\alpha/2}^2 pq}{\varepsilon^2}; p = q = 0.5, z = 1.96$$

as developed by author in [28], for a 95% confidence interval at a 5% margin of error, and considering the optimal values for proportion of response of interest, the sample size for this study was computed to be a minimum of 385. Finally, after adding 30% as a contingency (although in most cases 10% of the estimated sample size is considered adequate for contingency), the sample size was raised to 500.

Given this denominator and an account of the availability of sufficient teachers in schools, five zones from the seven zones of Tigray regional state were selected using simple random sampling techniques to become the focal areas of this study. From each zone, samples of two woredas (districts) were selected using the same technique. After the sampled woredas were identified, purposive and then availability sampling techniques were

used to identify two schools that could serve as a focus for the study. The justification for using purposive and then availability sampling was because it was difficult to get the number of teachers required for this study prior to the actual data collection. Thus identifying the schools within the woredas did not go as intended in terms of reaching the desired number (500). Furthermore, the selection of zones, woredas and schools was made in consultation with Tigray Regional State Education Bureau experts, leading to the selection of four schools from each zone. Thus although a total of twenty primary schools were supposed to be included, this was in practice difficult to achieve in the intended number in these twenty schools. To mitigate this problem, upgraded teachers in nearby schools were recruited in order to reach the intended sample size.

Once the sampled schools were identified, lists of teachers who had upgraded from certificate to diploma through the summer in-service upgrading program in the last ten years, and who were currently teaching in primary schools (first and second cycle, grades 1-8) in the five zones of Tigray (Mekele, South Eastern, Eastern, Central and Western), were included in the sampling frame. In this way, a total of 514 teacher respondents were consulted for data collection. These were from Central zone (104), Eastern (107), Mekelle (101), South East (100), and North West (102). Male = 167 and Females = 347; graduates from Adwa CTE = 277 and AbbiAddi = 237. In terms of field of specializations: Languages = 152, Science = 239 and Social Science = 123; teaching in the first cycle (311) and in the second cycle (203).

For the qualitative data collection, the principle of 'data saturation' was employed, whereby data and information collection were carried out until adequate data had been collected and no new information or themes emerged.

The study ensured a direct link between data triangulation and data saturation; the former ensures the latter. In addition, key informant interviewees were conducted with stakeholders in the MoE, Tigray region education bureau, the selected woreda education officers, the two colleges and in the selected schools including PTSAs.

3.4 Data Collection Instruments and Procedures

Educational researchers employ different methods to collect data from selected respondents. This may be because the researchers have several research questions, or they want to use different methods or sources to corroborate each other in the form of methodological triangulation [29]. Since this study focused on the effectiveness of the summer in-service upgrading teachers' education program of primary schools in Tigray Regional State, it raised different research questions that required multiple data gathered using different methods and in varied contexts.

Since gathering data using one method would have been insufficient to address the intended objectives, a cumulative view of data drawn from different sources, methods and contexts was employed, so as to triangulate the data by examining where the 'different data intersect' [29]. Triangulation methods in this study were also crucial to maximize the reliability of the data collected. Accordingly, a survey questionnaire containing both closed and open ended questions, classroom observations, key informant interviews, and text analysis were employed as data gathering tools, whose details are provided below.

3.5 Classroom Observations

Participant observation was used in most qualitative research because the researcher acts as a participant at some level in the settings that he or she is studying [30]. It is a qualitative data gathering tool where the researcher looks, listens and records the interactions in a particular setting. As this study followed a mixed methods research design that aimed to gather qualitative data, classroom observation was essential, as it helped to assess the teaching and learning practices of the upgraded teachers in relation to the teaching of course contents, teacher methods and assessment practices. Participant observation requires observers to make a record of what they observe in the settings they are studying, and these records usually take the form of raw field notes that are written on the spot while the researcher is in the setting [31]. Since the observations were mostly carried out in actual classrooms, the process required the immediate recording of raw information. Observing versatile descriptions of contexts, actions and conversations regarding the teaching and the interactions with the students, from the start of the class until the end, required timely note taking. Thus the raw data, which were collected through observation checklists, were recorded while learning and teaching was going on. In total, 194 lessons were observed in the sampled primary schools, from ten woredas, in five zones of the Region.

3.6 Key Informant Interviews

Many qualitative case studies combine observation with interviewing [29]. Indeed, the interview is ‘the primary data collection strategy in qualitative research’ [32]. Qualitative researchers use interviews to uncover the meaning structures that participants use to organize their experiences and make sense of their worlds [33]. Accordingly, the qualitative data were primarily collected through qualitative interviews, which served as a guiding instrument in the data collection process.

The purpose of using qualitative key informant interviews was to obtain descriptions from the interviewees of the meaning of the phenomena in question [34]. It is also a method of inter subjective interaction, which allows the researcher to enter another person’s perspective [35, 26]. Hence giving a voice to the purposely selected participants was an important part of this study. To this end, semi-structured key informant interviews were of interest, since they would result in a conversation with a structure and purpose. Flexibility and focus in the interviews were ensured through probing questions.

Employing many methods in this kind of study ensured that data were not missed. Thus, as stated in author [30], ‘meaning structures’ that were perhaps unseen during the observations were gathered through the key informant interviews. In a similar vein, when interviews are used in conjunction with observations, ‘they provide ways to explore more deeply participants’ perspectives on actions observed by researchers and provide avenues into events and experiences that have not been observed’ [30]. To this end, the key informant interviews played an indispensable role in assessing the effectiveness and relevance of the summer in-service upgrading program at both the CTE and school level, and identifying the critical challenges that hindered the effectiveness of teachers’ performances and students’ competency and achievement. As key informants were leaders who linked the key actors of the issue under study to other parts of the social world [36], in this study experts in the bureau of education, MoE, Management of CTEs and heads of departments were included. Eighty participants were

included as key informants in the study for the gathering of qualitative data in the surrounding of schools. In addition, representatives from the Ethiopian MoE's Teachers and Education Leaders Development Directorate (1), Regional Education Bureau (2), as well as teacher education college deans (2), department heads (2) and instructors (2), were included in the study. The participants were chosen because they were likely to provide valuable information on the issues at hand and thus, as Patton (1990) suggests, could increase the credibility and validity of the findings.

Regarding interviews, Hatch has further remarked that researchers have questions about certain topics in mind, but they are open to digressions; they expect the interview to move in the direction that the informant takes it and they plan to create probes or follow-up questions based on the responses they receive [37]. Accordingly, the interviews conducted in this study created a special kind of speech event during which the probing questions encouraged participants to explain their unique perceptions on the issues at hand. In addition, the process helped the researchers to listen intently to special language and other clues that revealed meaning structures, while responding to the guided items during the interview.

3.7 Survey Questionnaires

Given the number of variables and the number of respondents involved from whom we needed to gather data, a questionnaire with both closed and open ended questions was also employed with upgraded teachers. Creswell [38] notes that questionnaires are used 'so that respondents can best voice their experiences unconstrained by any perspectives of the researcher, or past research findings'. This, he argues, is because that data collected through observations and interviews are problematic due to the researcher's descriptions and interest in shaping the data collected to fit the study focus, and also because of the presence of the interviewer during the interview, the equipment used, and so forth [38]. Thus in the process of gathering relevant data for this study, a questionnaire using closed and open ended questions was essential to gather data on a wide range of respondent perspectives, opinions and experiences.

The survey questionnaire was given first priority to guide the effectiveness of the program and the teachers' performances, from the perspective of CTEs and schools. The questionnaire had two major categories: teacher experiences at CTE level and school level. In its design, it had both closed and open ended items, where the items were presented on a five point Likert scale. The scale ranged from: 1= strongly disagree (SDA), 2= Disagree (DA), 3= Neutral (N), 4=Agree (A) and 5=Strongly Agree (SA). With the same rating, teachers were also asked to rate from Very Low to Very High. However, these were grouped into three during analysis namely agree, neutral and disagree; or low, moderate and high. The items were made clear and simple enough to be understood by the respondents. The open-ended items were presented following the closed questions, for further clarification. Total of 514 primary school teachers involved in filling the survey questionnaire.

3.8 Secondary Documents

Documents play a great role in identifying key factors when gathering qualitative data, and are powerful indicators of the value systems operating within the region. Author in [26] stated that documents can provide a

behind-the-scenes look at institutional processes and how they come into being. They can give the researcher a sense of history related to the contexts being studied [39].

With these views in mind, documents related to colleges of teacher education and primary schools were accessed. In valuing documents for being able to 'tell their own story independent of the interpretations of participants' [40] the following documents were gathered and referred: the Education and Training Policy (1994), the Teacher Development Program Blue Print, GEQIP I: 2008, GEQIP II: 2012, the CPD Framework 2013, ESDP V, 2015/16 - 2019/20, the primary school teachers' curriculum 2009 and 2013 (its organization, and its association with the summer in-service upgrading program), etc. Thus, the document review contributed to the making of comparisons between and among the primary data collected through other tools.

3.9 Method of Data Analysis

The effectiveness of the summer in-service upgrading program was examined through two major focus areas regarding effectiveness: at the training (CTE) level, in terms of building teachers' cognitive abilities, subject matter knowledge and professional ability; and at school level looking at the performance and perception of trained teachers in their post-training engagement (at schools), as demonstrated by improved classroom behaviour and overall enhanced teaching and learning practices to impact student learning and academic achievement. The physical setting of the CTEs was also considered part of the effectiveness measure.

CTE level effectiveness was further factored into four: *program organization, course design and development, instructional skills and facilities* at the CTEs. In the same way, school level effectiveness was classified into two: the *teaching-learning process*; and the *school environment*. In addition to these, the association between the summer in-service upgrading program and the school level implementation, as well as other personal and professional characteristics, were considered for measuring effectiveness.

4. Results and Discussion

4.1 Effectiveness at CTE Level

Effectiveness refers to the extent to which the summer in-service upgrading program's objectives have been achieved. To measure this, five units of analysis were used: teachers' cognitive ability; teaching and learning; subject matter knowledge (including content, pedagogy and support); teachers' classroom behavior; and physical setting (including time allocation and facilities).

To this end, the effectiveness of the summer in-service upgrading program was examined in two major focus areas: at the training (CTE) level, in terms of building teachers' cognitive abilities and subject matter knowledge; and the performance of trained teachers in their post-training engagement in schools, as demonstrated by improved classroom behavior and overall enhanced teaching and learning practices, and how this impacts student learning and academic achievement.

CTE level effectiveness was further factored into program organization, course design and development,

instructional skills, and facilities at the CTEs. In the same way, school level effectiveness was also classified into two parts in terms of executing maximum performance: the teaching/learning process and the school environment.

Table 1: Relevance and organization of the summer in-service upgrading program at CTE level

views of upgraded teachers on the overall summer in-service upgrading program at the CTE level	Disagree		Undecided		Agree	
	f	%	f	%	f	%
Orientation regarding the summer in-service upgrading program was clearly given	15	3	17	3.3	481	93.6
Expected outcomes/objectives of summer in-service upgrading program were clearly communicated	18	3.5	19	3.7	476	92.6
The summer in-service upgrading program was relevant to your needs as a teacher	21	4.1	17	3.3	473	92.2
Courses within the summer in-service upgrading program were interrelated	14	2.8	13	2.5	486	94.5
The time allocated for the summer in-service upgrading program was sufficient	140	27.2	28	5.4	344	66.9
The summer in-service upgrading program is activity/practice oriented	14	2.8	19	3.7	480	93.4
The summer in-service upgrading program is relevant to the demands/needs of my teaching career	29	5.7	34	6.6	451	87.8
I have acquired the desired knowledge and skills expected of the summer in-service upgrading program	13	2.5	24	4.7	477	92.8
The summer in-service upgrading program addressed gender issues adequately	16	3.1	10	1.9	488	95.0
The summer in-service upgrading program accommodated students with special needs/disabilities	49	9.6	31	6.0	426	82.9
The program accommodated the interest of students with special needs/disabilities	46	9.0	26	5.1	439	85.4

Respondents overwhelmingly reflected that the upgrading program was well organized in terms of communication of goals(92.6%), interrelationship of courses (94.5%), and sufficient allocation of time for courses (66.9%).

They also stated that the program was relevant to their professional engagement in that it was relevant to their needs as teachers (92.2%), that it was practice oriented (93.4%) and they have acquired the desired knowledge and skills expected from the program (92.8%) .

Interestingly another question was posed to help triangulate the responses, regarding the relationship of the teachers’ field of study in the CTE to the course they were currently teaching in schools.

While 193 (37.5%) depicted a strong relationship, 261 (50.8%) replied that they were only partly related, while 60 (11.7%) declared their field of study to be unrelated to the courses they were teaching in schools (Mean = 2.26, SD = .653).

This divergence of data has been corroborated with interview results that state that significant portion of graduates are involved in teaching courses that they were not trained for.

Table 2: Instructional skills employed in the summer in-service upgrading program at CTEs

Instructional skills related	Disagree		Undecided		Agree	
	f	%	f	%	f	%
The instructional approaches discourage student participation	36	7.03	35	6.84	441	86.13
The instructional process made use of multimedia/a variety of instructional media	7	1.36	17	3.31	489	95.32
The teachers used teaching methods in line with objectives/contents	313	60.89	182	35.41	19	3.70
Instructors were committed to teaching	4	0.78	18	3.50	492	95.72
Various methods of assessment (tests, quizzes, term papers, etc.) were employed	10	1.95	19	3.70	485	94.36

Table 2 presents the instructional skills used at the CTEs. Of the respondents, 489 (95.32%) agreed that the instructional process made use of multimedia or a variety of instructional media, and 492 (95.72%) asserted that instructors were committed to teaching. Nevertheless, 441 (86.13%) stated that the instructional approaches discouraged student participation, and 313 (60.89%) revealed that the teachers did not use teaching methods in line with objectives/content. The finding that there are serious concerns of instructional strategies on the part of college instructors despite instructor's commitment and usage of instructional media calls for a question on the preparation of instructional skills of instructors who involve in the program.

With regard to assessment 485 (94.36%) respondents confirmed that various methods of assessment (tests, quizzes, term papers, etc.) were employed at the CTEs. There is some support to these findings from the qualitative data. Heads H1 and H2 and instructors I1 and I2 revealed that appropriate assessment techniques were used with regard to the associated problem largely tests and of group work. Contrary to these findings, overwhelming qualitative data provides a compelling disapproval of the above finding. Respondent M2 reported that it was difficult to implement various methods of assessment as the number of students was so high. Respondent I3 also strengthened the idea that the time given in the summer semester is too short to utilize various assessment methods. Respondent 'I3' further consolidates the idea that some instructors involved in the summer program were part-timers and made use of just tests and assignments. In a similar manner, Interviewee H2 stated that 'during the regular program, the number of teachers is enough. However, in summer, they employ part-time teachers as the number of students increased, especially in Psychology and Pedagogy'. According to authors in [41]:

Many practicing teachers, for different reasons, have not learned some of the content they are now required to teach, or they have not learned it in ways that enable them to teach what is now required. In particular, curriculum reform processes... across different countries [have] resulted in many teachers now having to teach a curriculum that is quite different from the one for which they were educated and from [the] one with which they had become experienced (p. 7).

Given the intensity of the interview responses, the researchers feel that limited assessment methods were

employed during the summer upgrading programs, that may limit the capacity of the teachers in their practice at schools.

Table 3: Facilities available within the summer in-service upgrading program

Facility-related	Disagree		Undecided		Agree	
	f	%	f	%	f	%
There were inadequate library facilities	54	10.5	39	7.6	419	81.8
Library facilities were effectively utilised	215	46.2	66	14.2	184	39.6
There were inadequate laboratory facilities	92	19.8	65	14.0	308	66.2
Laboratory facilities were effectively utilised	55	10.7	30	5.8	428	83.4
There were adequate information and communication technology (ICT) facilities	51	9.9	51	9.9	411	80.1
ICT facilities were effectively utilised	50	9.8	57	11.2	404	79.1
Guidance and counseling services were available	59	11.5	40	7.8	413	80.7

In conducting proper teacher education, the quality of facilities is not only useful but critical. Issues regarding the availability of facilities and their use were addressed, and the results are presented in Table 3. The services outlined were library, laboratory, ICT and guidance and counselling. The results presented in Table 3 reaffirm that there were inadequate library facilities (considered by 81.8%), and given this, 46.2% stated that the library was not effectively utilised. Regarding laboratory facilities, 66.2% confirmed that laboratory facilities were inadequate, though 83.4% stated that the available laboratories were effectively utilised. With regard to ICT, 80.1% confirmed that ICT facilities were available and 79.1% declared that the ICT facilities were effectively utilised. For guidance and counselling services, 80.7% of the respondents also declared that they were available. Findings from the qualitative data agree with the data presented above. Interviewees stated that due to the high number of trainees the CTEs are made to accommodate – both colleges were built to accommodate ,around 1000 trainees but host 3000 – they hire secondary schools/spaces to conduct classes. Thus the challenges of suitability and provision of proper services when they accommodate 3,000 trainees is not difficult to fathom.

Table 4: Gains that the summer in-service upgrading program provided

	Low		Satisfactory		High	
	F	%	f	%	f	%
How helpful has the knowledge you acquired in your in-service training been to your subject mastery?	8	.8	104	20.2	402	78.6
How helpful have the practical skills you acquired been to your subject mastery?	3	.6	128	24.9	382	74.4
How do you assess the contribution of the summer in-service upgrading program in relation to your professional ethics?	2	.4	96	18.7	416	81.0

Table 4 presents responses regarding the usefulness of the summer in-service upgrading program in developing subject mastery, practical skills and professional ethics. In response to these questions, 402 (78.6%) confirmed that the program was helpful in developing their subject mastery, 382 (74.4%) revealed that the program had been helpful to promote the practical skills they acquired for their subject mastery, and 416 (81%) revealed that the program contributed highly to the development of professional ethics.

The overall contribution of the summer in-service upgrading program in terms of building teachers' capacities was also assessed, the results of which are shown below.

How do you evaluate the summer in-service upgrading program in terms of building your capacities?

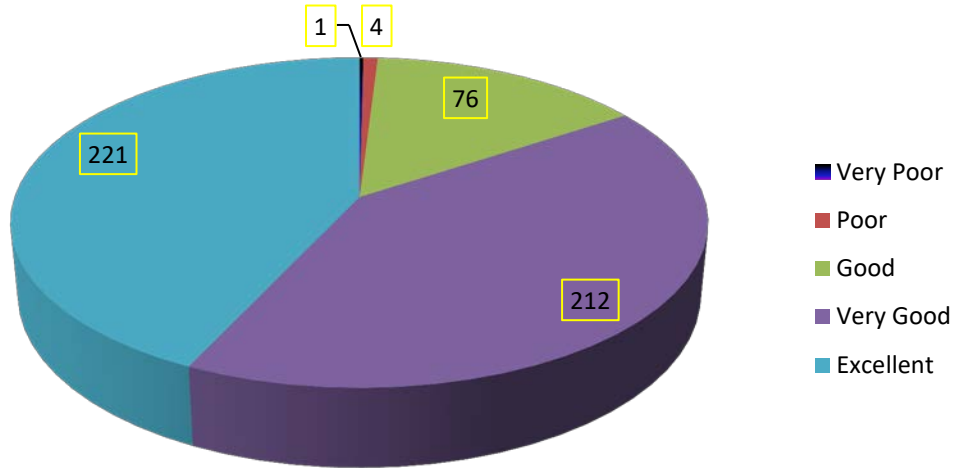


Figure 2: Teachers' evaluation of the summer in-service upgrading program

As demonstrated in figure 2, 84.2% of the respondents rated the overall contribution of the summer in-service upgrading program to be very good (41.2%) and excellent (43%).

Following this, respondents were asked to reflect on whether the program needs improvement. Results depicted that the summer in-service upgrading program needs modification although the degree of modification varies.

Interview with an expert in the MoE noted that "modification is needed for several reasons, firstly, the program was not reviewed since its establishment and criticisms are coming from the host colleges and secondly, there is a need for overall reform on teacher education".

The same response was supplied from the regional bureau experts.

In response to this, the bureau expert states that course based reviewing has been started, e.g. "Measurement and Evaluation" at a college level, but overall reform is underway by the Ministry of Education.

With an attempt to see what the majority others would say about revision of the program, Table 5 below presents findings where close to 60% of the respondents demand revision whether major or minor.

Table 5: Opinion regarding the need for improvement of the summer in-service upgrading program

	f	%
Needs major modification	104	20.2
Needs minor modification	205	39.9
Should be completely changed	5	1.0
Should remain as it is	200	38.9
Total	514	100.0

The opinions of the teachers regarding the summer in-service upgrading program were sought in terms of the areas (courses) of the program that were most helpful in performing their current teaching duties successfully. Table 6 presents the results.

Table 6: Areas of the summer in-service upgrading program that were most helpful

	f	%	Valid %	Cumulative %
Major area courses	432	84.0	84.0	84.0
Minor area courses	18	3.5	3.5	87.5
Other	35	6.8	6.8	94.4
Pedagogical courses	20	3.9	3.9	98.2
Supportive courses	9	1.8	1.8	100.0
Total	514	100.0	100.0	

Table 6 shows that the major area courses were considered by the respondents as the most useful and helpful in promoting teachers' capacities. The issue of pedagogical content knowledge was, however, not reported to be useful. Much of the emphasis being given to subject content knowledge was taken as a rationale for the revision of the curriculum framework for primary teacher education.

Much of the emphasis on subject content knowledge seems to be consistent with the initial goals of the program that propelled the production of the current upgrading curriculum framework for primary teachers. MoE expert explains this fact as follows:

....since its inception, focus was given on subject matter mastery for reports were indicating teachers lacking subject matter mastery. At the same time the fact that the in-service upgraded teachers were in the system of teaching, they were exempted from practicum although the teaching methodology was taken theoretically in colleges. This indicates that focus was not pedagogy(M1)

In addition to balancing courses and focus of contents, duration of the program was also another area of examination. The duration of the summer in-service upgrading program and its adequacy were assessed. In response, 172 (33.5%) reported that the program's duration was adequate, 53 (10.3%) stated that it was too long, while 289 (56.2%) said that the training program was too short. In practice, summer semesters have eight weeks that are accompanied by start time delays and early closure. The observation regarding the limited time

allocation of the training program, as identified earlier, was supported by a significant proportion of respondents who confirmed the short duration of training – an issue that should trigger critical questions regarding the effectiveness of the program.

To gain an insight into teachers' views on the modalities of the summer in-service upgrading program (cluster, linear and specialization programs were in effect so far), the following question was asked: 'Which training modality would you support being focused on in your school following the knowledge, attitude and skills (KAS) you acquired in the summer in-service upgrading program?' In response to this question, 374 (72.8%) stated cluster, 60 (11.7%) stated linear, 54 (10.5%) stated generalist, and 25 (4.9%) stated specialist.

4.2 Effectiveness at School Level

The second objective that the study sought to address was to assess the teaching and learning practices of the upgraded teachers in relation to the teaching of course content, teaching methods and assessment practices. To meet this objective, several questions were put to upgraded teachers and their answers were triangulated using the responses of school principals, supervisors and experts from the bureau of education. The results and associated interpretations are presented below.

Table 7 shows that a majority of the respondents seemed to agree that the summer in-service upgrading program had positively influenced their practice in teaching-learning in schools regarding improved planning; revising modes of delivery to address new changes using locally available resources; employing learner-centred approaches; developing subject matter mastery; maximizing student networking; collaborative learning and peer teaching; developing teamwork with department and inter-departmental staff; accommodating PTSA remarks to enhance student learning; and having a good mastery in developing examinations that evaluate student learning.

In addition, 89.35% of the respondents replied that the summer in-service upgrading program had helped them to develop an interest in the teaching profession, while 97.28% had acquired better classroom management skills. On aggregate, 90.28% of the respondents revealed that they had developed greater confidence through the summer in-service upgrading program in the subject in which they were trained. Despite these gains, there are, however, some points that require further consideration: 31.42% of the respondents revealed that they had not conducted action research to enhance their teaching and school environment since their graduation; 55.38% had faced difficult topics in the subject they were teaching; and 95.72% had confronted difficulties in using instructional strategies for some of the content they were teaching.

The extent of professional engagement by upgraded teachers in schools, and the effectiveness and efficiency of the delivery mechanisms that teachers employ, were assessed.

In this regard, almost all of the woreda level experts confirmed that teachers were engaged in using locally available materials to help student learning, but regarding their practice – in terms of feedback and extracurricular activities – respondents shared the view that teachers' engagement varied from school to school. The conditions associated with the school environment are discussed below.

Table 7: Teaching-learning at schools (post summer in-service upgrading program)

Implementation Practices	Disagree		Undecided		Agree	
	f	%	f	%	f	%
After the in-service upgrading program:						
I have developed skills in preparing daily and annual lesson plans of the subject I have been teaching (in terms of educational taxonomy in the lesson plan)	9	1.77	15	2.95	484	95.28
I have revised the daily and annual lesson plans of the subject I have been teaching to meet environmental changes and crosscutting issues	20	3.89	9	1.75	485	94.36
I have revised the mode of delivery to address these changes using locally available resources	3	0.58	11	2.14	500	97.28
I have employed a learner-centred approach to a better level than I did before	5	0.97	15	2.92	494	96.11
I have developed better subject matter mastery than before	5	0.97	14	2.72	495	96.30
I got helped to develop a better way of delivering subject matter	3	0.58	3	0.58	508	98.83
I have maximised student networking, collaborative learning, and peer teaching after the summer in-service upgrading program	32	6.23	21	4.09	461	89.69
I helped students' performance to improve as a result of the changes I have made since my graduation	10	1.95	12	2.33	492	95.72
I have developed team working with my department and inter-departmental staff	16	3.11	20	3.89	478	93.00
I have started to accommodate PTSA remarks to enhance student learning	7	1.36	14	2.72	493	95.91
I have a good mastery in developing examinations that evaluate student learning	12	2.33	14	2.72	488	94.94
I developed interests/attitudes in the teaching profession	32	6.31	22	4.34	453	89.35
I have conducted action research to enhance my teaching and school environment since my graduation	159	31.42	45	8.89	302	59.68
I have faced difficult issues related to the subject I have been teaching	187	36.59	41	8.02	283	55.38
I have been confronted with difficulties in using instructional strategies for some of the content I have been teaching	9	1.75	13	2.53	492	95.72
I have acquired better classroom management skills than before	6	1.17	8	1.56	500	97.28
Overall, I have developed confidence in the subject I was trained in through the summer in-service upgrading program	23	4.55	27	5.34	456	90.12

Table 7 shows that a majority of the respondents seemed to agree that the summer in-service upgrading program had positively influenced their practice in teaching-learning in schools regarding improved planning; revising modes of delivery to address new changes using locally available resources; employing learner-centred approaches; developing subject matter mastery; maximizing student networking; collaborative learning and peer teaching; developing teamwork with department and inter-departmental staff; accommodating PTSA remarks to enhance student learning; and having a good mastery in developing examinations that evaluate student learning. In addition, 89.35% of the respondents replied that the summer in-service upgrading program had helped them to develop an interest in the teaching profession, while 97.28% had acquired better classroom management skills. On aggregate, 90.28% of the respondents revealed that they had developed greater confidence through the summer in-service upgrading program in the subject in which they were trained. Despite these gains, there are, however, some points that require further consideration: 31.42% of the respondents revealed that they had not conducted action research to enhance their teaching and school environment since their graduation; 55.38% had faced difficult topics in the subject they were teaching; and 95.72% had confronted difficulties in using instructional strategies for some of the content they were teaching.

The extent of professional engagement by upgraded teachers in schools, and the effectiveness and efficiency of the delivery mechanisms that teachers employ, were assessed. In this regard, almost all of the woreda level experts confirmed that teachers were engaged in using locally available materials to help student learning, but regarding their practice – in terms of feedback and extracurricular activities – respondents shared the view that teachers’ engagement varied from school to school. The conditions associated with the school environment are discussed below.

The summer in-service upgrading program is meant to develop the competence of teachers, yet the impact that the program can make on school practice is associated with the curricular and school environment. Related to this, how teachers evaluated the primary school curriculum in terms of executing the knowledge and skills they had acquired in the summer in-service upgrading program was addressed.

Table 8: Reflection on the primary school curriculum in terms of executing the knowledge and skills acquired in the summer in-service upgrading program

School Curriculum	Disagree		Undecided		Agree	
	f	%	f	%	f	%
The curriculum needs improvement regarding student competencies for better quality learning	59	11.50	31	6.04	423	82.46
The curriculum needs improvement with regard to its level of difficulty to students	65	12.67	34	6.63	414	80.70
The curriculum needs improvement with regard to illustrations	127	24.95	51	10.02	331	65.03
The curriculum lacks sufficient content to cover learning objectives	78	15.20	35	6.82	400	77.97
The curriculum has adequate learning activities	23	4.48	27	5.26	463	90.25

Table 8 shows that a majority of the respondents seemed to agree that the curriculum needs improvement regarding student competencies for better quality learning (82.46%) and its level of difficulty to students(80.70%), and77.97% also believed that the curriculum lacks sufficient content to cover learning objectives. But at the same time, 90.25% of the respondents thought that the curriculum had adequate learning activities.

The factors that led the teachers to reach this conclusion could be related to several issues, one being the fact that school level curricular content lacks alignment with that of the content taught at the CTEs. An important point to mention is that if the program courses do not enable teachers to adequately understand the curriculum they teach, then difficulties will arise in terms of making lessons activity-based, in participation, in utilising various methods to deliver the subjects taught, in balancing theory and practice, in employing a variety of assessments (tests, quizzes, homework, etc.), and in providing timely feedback to students regarding the results of tests, quizzes, homework, examinations, and the overall delivery will be in jeopardy.

The points discussed above reveal how prepared and competent to implement the school curriculum the upgraded teachers felt they were. An attempt was also made to investigate the school environment and teacher implementation following the summer in-service upgrading program. Table 9 presents a descriptive report of the teachers’ responses.

Table 9: School environment

School environment	Disagree		Undecided		Agree	
	f	%	f	%	F	%
The school leadership is not cooperative in exercising the KAS acquired in the summer in-service upgrading program	16	3.12	19	3.70	478	93.18
The school leadership does not allow subject teachers to revise lesson plans to address environmental and crosscutting issues	10	1.95	13	2.53	490	95.52
The school leadership accepts proposals for improvement based on the lessons learnt in the summer in-service upgrading program that enhance students learning	20	3.90	27	5.26	466	90.84
The school environment encourages teachers to inculcate the contribution of clustering in student learning originating from the lessons learnt in the summer in-service upgrading program	24	7.10	34	10.06	280	82.84
The school provides opportunities to organise curricular and co-curricular activities to the betterment of the school environment	164	32.16	53	10.39	293	57.45
The school leadership encouraged me to conduct action research to enhance student learning following the research skills acquired in the summer in-service upgrading program	23	4.48	23	4.48	467	91.03
The school leadership budgets teachers to organize student visits that maximize student learning	45	8.79	31	6.05	436	85.16
The school encourages me to work to change the school environment based on the lessons gained from the summer in-service upgrading program	45	8.79	31	6.05	436	85.16

Table 9 reveals that there are mixed results at school level. Of the respondents, 93.18% revealed that the school leadership was not cooperative in implementing the knowledge and skills acquired in the summer in-service upgrading program. Similarly, 95.52% responded that the school leadership did not allow subject teachers to revise lesson plans to address environmental and crosscutting issues. However, 90.84% replied that the school leadership did accept proposals for improvement based on the lessons learnt through the summer in-service upgrading program to enhance student learning, and 82.84% confirmed that the school environment encouraged teachers to inculcate the contribution of clustering in student learning originating from the lessons learnt in the summer in-service upgrading program. Furthermore, 91.03% stated that the school leadership encouraged them to conduct action research to enhance student learning following the research skills acquired in the summer in-service upgrading program, 85.16% stated that the school budget allowed teachers to organize student visits to maximize student learning, and 85.16% agreed that the school encouraged them to work to change the school environment based on the lessons gained through the summer in-service upgrading program. The fact that 31.42% of the respondent teachers were not involved in conducting action research (as presented in Table 9) can be inferred to be a result of their own limitations. Nevertheless, lack of support from the school leadership in implementing the knowledge and skills acquired in the summer in-service upgrading program, and a lack of cooperation in revising lesson plans, were among the important issues identified that need to be addressed. Despite this, the overall practice in schools and the support offered by the schools revealed that teachers' practice had improved since training. Woreda expert W8 stated that: "Teachers' performance is improving from time to time. There is a difference before and after upgrading. Especially after they graduated from college, they mastered the subject matter and are improving their self-confidence. There is no problem of ethics..." In support of this, teachers' response to evaluate the level of their qualification in relation to the cycle they were currently engaged with, revealed that 499 (97%) of them state that their qualification was either appropriate or too high.

Interesting but contrary to the above assertion, although teachers declared they were up to the required level and some school principals and woreda experts confirmed it, this fact seems to be limited to the credential qualifications of teachers than the actual teacher manifested competency. According to school principal S2, ‘as what they got in the college is not enough, we help them by letting them participate in different short trainings’. S4 also stated that the graduate teachers complained when they were assigned to teach English, physics and chemistry. Woreda expert W2 stated that ‘If we evaluate their knowledge in terms of students’ results enhancement, they still are not matured enough in the subject they teach’. Woreda expert W8 also stated that: "there are two different groups of teachers in the woreda. The one group includes the youth and the other group is older. The youth want to change their professions, and as a result they have no interest in enhancing student learning. The older groups try their best to enhance their students. But their pedagogical skills are very low. There is not enough implementation of collaborative learning. But they have good interpersonal relationship.

Table 10: Gains of teachers from the summer in-service upgrading program

	Very Low		Low		Satisfactory		High		Very High	
	f	%	f	%	f	%	F	%	F	%
How do you evaluate the relevance of the summer in-service upgrading program for the quality of learning in the school?	0	0	8	1.6	97	18.9	227	44.2	182	35.4
How helpful did you find the summer in-service upgrading program for further education?	0	0	7	1.4	89	17.3	221	43.0	197	38.3
How do you assess the contribution of the summer in-service upgrading program to improving your attitude towards teamwork in the school?	0	0	2	.4	82	16.0	213	41.4	217	42.2
How helpful were the capabilities you obtained from the summer in-service upgrading program to your practice in schools, in terms of:										
• Subject you teach	1	.2	7	1.4	60	11.7	223	43.4	223	43.4
• Classroom management	1	.2	2	.4	54	10.5	213	41.4	244	47.5
• Instructional strategies	1	.2	1	.2	48	9.3	228	44.4	236	45.9
• Assessment of students’ knowledge and skills	1	.2	2	.4	49	9.5	178	34.6	284	55.3
• Feedback provisions to students	1	.2	3	.6	48	9.3	162	31.5	300	58.4

In relation to the relevance of the summer in-service upgrading program, 409 (79.6%) confirmed that it was high or very high. In addition to this, the helpfulness of the training for further education was rated as high or very high by 418 (81.3%) of the respondents. The contribution towards improving attitude was rated as high or very high by 430 respondents (83.6%). In addition, a significant number of respondents rated as high and very high the contribution that the summer in-service upgrading program brought in terms of building the capacities of teachers regarding the subject they teach, classroom management, instructional strategies, assessment skills and feedback provision.

5. Findings, Conclusions and Recommendations

5.1 Findings

- There are clearly declared gains of the program in terms of enhanced teacher capability in planning,

adjusting lessons with environmental changes, assessment skills and subject matter mastery. Accordingly program beneficiaries rated the program excellent (42%) and very good (43%).

- Program beneficiaries/teachers assert that the program is relevant to their actual learning and teaching needs.
- Though there is a significant satisfaction on the program content, program beneficiaries suggested major (20.2%) and minor (39.9%) modification as compared to those who want the program to remain as is (38.9%).
- The benefits in creating positive self efficacy on subject mastery on the side of teachers is promising, yet the pedagogical knowledge has been underestimated, the actual benefits gained in terms teaching practice improvement and student learning are found to be less
- Instructional skills and approaches (use of methodology) of college level instructors is found unsatisfactory deterring student participation. Respondents underscore that as much as they gained from the subject matter mastery, they did not learn enough in terms of instructional skills from their college instructors. There is a misalignment reported on the use of instructional methods with contents and learning objectives.
- There is a negative feeling that school leadership is not cooperative in helping teachers exercise what they acquired in the upgrading program.
- There is a demonstrated inadequacy of instructional facilities like libraries and laboratories. In contrast program beneficiaries underscored better use of the existing facilities.
- The findings here raise a challenge regarding the primacy of the view that a sufficient training program alone can lead to a significant impact in schools.
- There is no complete alignment between college level courses and school text books, as there are some contents of the school curricula that are not treated at the CTEs.
- College carrying capacity is figured out as an influencing factor. Colleges accommodate beyond their capacities, negatively affecting quality delivery, facility and learner satisfaction.
- Program follow-up, including post-graduation support, graduate quality monitoring, and accreditation programs are not in place.
- No program review has been made since the start of the program, which otherwise must be conducted regularly.

5.2 Conclusions

- There has been less preparation (on program inputs, curriculum alignment, and program design) on the part of the colleges and the government commensurate to the magnitude of requirement of the upgrading program, undermining the program goals of building effective teacher capacities.
- The prime objective of capacitating teachers in their subject knowledge mastery has been successfully achieved through the summer upgrading program. But the neglect shown at the commencement of the program towards the professional (pedagogical training part) has negatively influenced the implementation and outcome of the program.

- The upgrading program for teachers' capacity was in short sight for not including school principals, as school governance has been found a stumbling block for upgraded teachers to experiment and innovate back in their schools.

5.3 Recommendations

- Mechanisms need to be put in place to ensure that upgraded teachers demonstrate continued engagement in their professional development in the schools.
- Since CTEs cannot fully equip teachers, to fill gaps that could not be covered at the CTEs during teacher training, there is a need to install school based CPD with proper support from colleges. This should focus on identifying contents from the school curricula that were not addressed at the CTEs and fill these in the school level CPD.
- Since the workplace situation was found to be a negative contributor hindering teachers from demonstrating their competence, there has to be a mechanism to align the workplace situation and the upgrading programs. CTE trainings should focus on workplace climate and the TREB should create academic friendly schools where teachers demonstrate academic rigor and innovation; special emphasis has to be paid on school leadership at least to ensure that they are instructional leaders, in addition to all the efforts they exert to make the learning environment appealing.
- If teachers are more likely to exhibit competence and increased enthusiasm, one would say that the joint consideration of in-service training in CTEs and of robust and continued professional development in schools is a critical paradigm that must be installed, in order to ensure that the upgrading training is effective.
- The carrying capacity was another factor impeding the effectiveness of the CTEs. High numbers of trainees are enrolled in the CTEs and hence, it is useful that the CTEs need to admit students based on their carrying capacity.
- Once teachers are upgraded, this should not be an end in itself. Tracking of career structure, for example, taking a certain amount of credits each year, or other forms of professional development have to be in place for the effective implementation and impact of the upgrading program to be achieved.
- In most cases, program evaluation was conducted in three to four years so that deficient areas of a batch will be corrected and prevented for the upcoming batches. This being so, no research was conducted, this study being a pioneer, in this regard. It is therefore advisable for the concerned bodies to consider program review as one of their periodic agendas to enhance quality of teaching learning and students' achievement.
- Research shows that professional development is most effective in promoting teacher learning when it addresses the teaching and learning of particular academic subject matter instead of general teaching principles. This entails utilization of team teaching that will be useful for catering specificities of expertise.

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References

- [1] Kassa Michael. "Mathematics Teacher Education and Teachers' Professional Competence in Ethiopia" Doctoral dissertation. Addis Ababa University, Addis Ababa, 2014.
- [2] K. M. Zeichner, & D. P. Liston. "Theme: Restructuring teacher education". *Journal of Teacher Education*, 41(2), 3-20, 1990.
- [3] S. Blömeke, F. Hsieh, G. Kaiser, and W. Schmidt, Eds. *International Perspectives on Teacher Knowledge, Beliefs and Opportunities to Learn (TEDS-M Results)*, New York, Springer Dordrecht Heidelberg, 2014.
- [4] Nasir Tajure and Kedir Assefa. "Ethiopian Teacher Education System: Barriers and Contradictions". *Journal of Educational and Social Research*, Vol. 1 (5) 2011.
- [5] S. Blömeke, & G. Kaiser. Theoretical Framework, Study Design and Main Results of TEDS-M in Blömeke S., Hsieh F., Kaiser G., and Schmidt W. (Eds). *International Perspectives on Teacher Knowledge, Beliefs and Opportunities to Learn (TEDS-M Results)*, New York, Springer Dordrecht Heidelberg, 2014.
- [6] L. Shulman. "Knowledge and Teaching: Foundations of the New Reform". *Harvard Educational Review*, 57 (1), pp. 1 – 22, 1987.
- [7] Cochran-Smith. "Evidence and Inquiry in Teacher Education." Special issue of *Journal of Teacher Education*, 53(2), March/April, 2002.
- [8] UNESCO: IIEP (E. Villegas-Reimers) (2003). "Teacher Professional Development: An International Review of the Literature. Paris: UNESCO" Internet <http://unesdoc.unesco.org/images/0013/001330/133010e.pdf> May 27, 2018.
- [9] Ministry of Education: General Education Quality Improvement Program (GEQIP I, 2008) Addis Ababa, Ethiopia.
- [10] Federal Ministry of Education. "Education Sector Development Program - ESDP V: 2015/16 – 2019/20", Internet <https://www.coursehero.com/file/21167659/ESDP-V-FINAL> May 21, 2018 p.35
- [11] Zewdu Gebrekidan. National Learning Assessments in Ethiopia Synthesis of the results. PPT presentation. Unpublished material presented at IER, AAU, July 6, 2010
- [12] Christine Smith and Marilyn Gillespie (2007). "Research on Professional Development and Teacher Change: Implications for Adult Basic Education". Internet

http://www.ncsall.net/fileadmin/resources/ann_rev/smith-gillespie-07.pdf. March, 2017

- [13] Maria Teresa, Tatto Ray, Peck John and etal. (2012). "Policy, Practice, and readiness to teach primary and secondary mathematics in 17 countries: Findings from the IEA Teacher Education Development Study in Mathematics (TEDS-M), Amsterdam, the Netherlands, Muticopy: International Association for Educational Achievement (IEA)". Internet https://www.iea.nl/fileadmin/user_upload/Publications/Electronic_versions/TEDS-M_International_Report.pdf January, 2017.
- [14] Ministry of Education (2013).Curriculum Framework for Primary Pre-service Teacher Education. Teachers and Education Leaders Development Directorate, Addis Ababa
- [15] P.H.Wilson, P. Sztajn, C. Edgington, and M. Myers. "Teachers' Uses of a Learning Trajectory in Student-Centered Instructional Practices". *Journal of Teacher Education*, Vol. 66(3) pp. 227– 244, 1979.
- [16] L. Shulman. "Those Who Understand: Knowledge Growth in Teaching". *Educational Researcher*, Vol. 15 (2), pp. 4 – 14, 1986.
- [17] Federal Ministry of Education. Early Grade Reading Assessment (EGRA 2016), Ethiopia
- [18] H. Schwartz. "The changing nature of teacher education" in, *Handbook of research on teacher education*,J. Sikula (Ed.) New York: Macmillan, 1996, pp. 3-13.
- [19] J. Goodlad. "Teacher education: For what?" *Teacher Education Quarterly*, Vol. 25(3), pp. 16-23, 1998.
- [20] D. S. Rychen. "An overarching conceptual framework for assessing key competences in an international context Lessons from an interdisciplinary and policy-oriented approach". in *The foundations of evaluation and impact research third report on vocational training research in Europe: background report*. P. Descy, & M. Tessaring, (Eds) Luxembourg: 2004
- [21] V. Richardson. "The Role of Attitudes and Beliefs in Learning to Teach", in, *Handbook of Research on Teacher Education*, J. Sikula (Ed.). NewYork,1996, pp.102 – 119.
- [22] P. Ernest. "The Impact of Beliefs on the Teaching of Mathematics",in, *Mathematics Teaching: The State of the Art*, P. Ernest (Ed.). London:Falmer Press, 1989, pp.249 – 254.
- [23] H.J. Forgasz, & G.C. Leder."Beliefs about mathematics and mathematics teaching" in *The international handbook of mathematics teacher education– Knowledge and Beliefs in Mathematics Teaching and Teaching Development*, Vol. 1. P.Sullivan & T. Wood (Eds.). Rotterdam: Sense Publishers, 2008, pp. 173 – 192.

- [24] V. Rajović, and L. Radulović. “Kakonastavniciopažajusvojeinicijalnoobrazovanje: nakojinačinsusticaliznanja i razvijalikompetencije. [How teachers perceive their initial training: how they acquired knowledge and developed competencies]” *Nastavaivaspitanje* Vol.4 pp. 413-35 December, 2007.
- [25] Robert K. Yin. *Case Study Research: Design and Methods*. Applied Social Research Methods Series.Vol. 5, 3rd Ed., London: Sage publications, Inc. International Educational and professional Publisher, 2003.
- [26] Michael Quinn Patton. *Qualitative Evaluation and Research Methods* 2nd Ed. USA: California Sage publications, Inc.Office for Official Publications of the European Communities, (Cedefop Reference series, 58) 1990, pp.238.
- [27] Michael Quinn Patton. *Qualitative Evaluation and Research Methods* 2nd Ed. USA: California: Sage publications, Inc.Office for Official Publications of the European Communities, (Cedefop Reference series, 58) 1990, pp.230
- [28] W.G. Cochran. *Sampling Technique*. New York: Wiley, 1963.
- [29] David Silverman and Amir Marvasti. *Doing Qualitative Research: A Comprehensive Guide*. Los Angeles: SAGE, 2008, pp. 156-57.
- [30] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002,pp. 72.
- [31] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002,pp. 77.
- [32] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002,pp. 23.
- [33] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002, pp. 91.
- [34] Steinar Kvale. *Interview Views: An Introduction to Qualitative Research Interviewing*. Thousand Oaks, CA: Sage Publications,1996.
- [35] Alan Bryman. *Social research methods* (2nd ed.) Oxford University Press, 2004
- [36] Linda Kalof, Amy Dan, and Thomas Dietz. *Essentials of Social Research*. New York: McGraw-Hill, 2008.

- [37] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002, pp. 95.
- [38] John W. Creswell. *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson, 2012 p. 218
- [39] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002, pp. 117.
- [40] Amos J. Hatch. *Doing Qualitative Research in Education Setting*. Albany: State University of New York Press, 2002, pp. 119.
- [41] J. Adler, D. Ball, K. Krainer, F. Lin, and J. Novotna. "Reflections on an Emerging Field: Researching Mathematics Teacher Education". *Educational Studies in Mathematics*, Vol. 60, No. 3, pp. 359-81, 2005.