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GENERATING EVIDENCE

Generating Evidence:

The Evaluation of the Teacher Continuous Professional Development Framework, in the Case of Ethiopia

Blene Aklilu Betemariam

Lynn University

May 2017

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Abstract

Ethiopia faces a tremendous challenge producing an adequate supply of teachers to meet demands while maintaining the quality of education. Today, 497,737 (0.55%) of the teaching population in Ethiopia support 44,555,953 (49%) of the student population under the age of 18. Out of which, 70% stated they would leave the teaching profession given the opportunity. To address these issues, the Ethiopian Ministry of Education introduced the 2009 Continuous Professional Development (CPD) framework as part of the strategic intervention plan. The Ministry spent over \$132.2 million US dollars on teacher development over nine years to improve the quality of education, teachers' performance, and students' achievement. Hence, this study focused on seeking evidence to identify key efficiency and performance indicators of the CPD program's accomplishments and to find support if its accomplishments produced valid and effective outcomes. This case study centered on identifying the key indicators based on the experiences and perspectives of the research participants. The results confirmed a discrepancy between the program's assumptions and expectations and real life outcomes. The findings supported a ground up approach that encourages teachers' involvement in the early stages of the program's design and implementation to gain commitment, enhance performance, and develop sustainable professional growth. The study recommended a technology-based CPD training delivery platform for teachers in Ethiopia to provide easier access to the training program and to help sustain evidence-based performance evaluation system, which is essential for validating the effectiveness of the CPD framework.

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2017

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To the one that believed in me, my father, Aklilu Betemariam

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Definition of Terms

Acronyms used

CPD	Continuous Professional Development
CRC	Cluster Resource Center
EFA	Education for All
ESDP	Education Sector Development Program
GEQIP	General Education Quality Improvement Program
GMR	Global Monitoring Report
MDG	Millennium Development Goals
MOE	Ministry of Education
NER	Net enrolment ratio: enrollment of the official age-group for a given level of education, expressed as a percentage of the population in that age group.
NLA	National Learning Assessment
OWG	Open Working Group
SDG	Sustainable development growth
TDP	Teacher Development Program
UN	United Nations
UNESCO Organization	United Nations Economic, Scientific and Cultural
UIL	UNESCO Institute for Lifelong Learning
UIS	UNESCO Institute of Statistics
UNICEF	United Nations Children's Fund
UN MDG	United Nations Millennium Development Goals

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Chapter One: Introduction

Introduction

Ethiopia set a goal to become a middle-income economy by 2020 -25 (Dohj and Verspoor, 2013). For this reason, the economic constraint posed by the short supply of human capital intensified Ethiopia's investment in education. To this effect, the Human Development Director at the World Bank stated that "economic transition from low- to middle-income status requires changes in the skills that meet the demands of the labor market" (The World Bank, 2013, p xi). Thus, concerns about the quality of education took precedence as Ethiopia battled to move its workforce away from an agrarian economy towards knowledge-based economy (Dhoj & Verspoor, 2013).

The Ministry of Education of Ethiopia set the "Teacher Development" programs as the "major pillar" of the General Education Quality Improvement Program (GEQIP) to significantly impact the quality of education(Oulai, Lugaz, Minas, & Teklehaimanot, 2011, p.20; Dhoj & Verspoor, 2013). For this reason, the Ministry of Education introduced the 2009 Continuous Professional Development Framework (henceforth referred to as CPD) as a national intervention program to meet the demands of Ethiopia's education transformation. This framework was designed for teachers and school supervisor to improve their performance and to promote the advancements of students (Ministry of Education (MOE), 2009; MOE, 2010; The World Bank, 2013). These initiatives were expected to cultivate the necessary skill sets to meet the country's ambitious economic transformation (Oulai, Lugaz, Minas, & Teklehaimanot, 2011, p.20; Dhoj & Verspoor, 2013).

During this period, Ethiopia increased its access to education and grew its workforce; nevertheless, the "efficiency indicators" suggested an "unacceptably low" achievement rates (Dhoj & Verspoor, 2013, p. 6-9). According to Dhoj & Verspoor (2003), the low-efficiency

indicators resulted from a dropout rate of 28 percent in grade 1, compounded with the primary school's completion rate of 49 percent and the literacy rate of 36 percent. Additionally, the educational attainment rate in Ethiopia remained at 1.5 years for the population of 15 years and older (Dhoj & Verspoor, 2013, p. 6-9). These indicators highlighted a lack of the significant transformational impact on the Ethiopian workforce to propel the country's economic transformation to a middle-income economy (Dhoj & Verspoor, 2013, p. 6-9).

Furthermore, the expansion of primary school enrollment rate (at above 90 percent) coupled with secondary education enrollment numbers also placed increased pressure on the supply end of producing adequately trained teachers in Ethiopia. As a result, teachers were not able to diagnose and effectively develop student competency skills, which additionally contributed to the decline in the quality of education in Ethiopia (Abebe & Woldemhannas, 2013; Bastian, Steer, & Berry, 2013; UNESCO, 2010; UNESCO, 2012; UNESCO, 2013a).

Studies revealed that the 2009 CPD intervention plan helped teachers 'upgrade' their qualification from certification (one-year certification) to diploma levels (two-year certification). However, there was a lack of supporting evidence that the CPD framework influenced the teaching and learning strategies to spur change in the overall quality of education (Hailu & Jabessa, 2010; Desta, Chalchisa, & Lemma, 2013; Woldab, 2014; Wondem, 2015; Gemedo & Tynjala, 2015; Kassa, Tefera, & Amdemeskel, 2015).

This research, therefore, sought evidence to identify key performance indicators of the CPD framework and evaluated its performance based on the three policy assumptions and expectations established by the Ethiopian Ministry of Education:

- The CPD programs will improve the quality of education,
- The CPD programs will improve teacher performance, and

- The CPD programs will achieve higher student achievement scores (MOE 2005; MOE 2008).

More specifically, the study focused on identifying key indicators necessary to evaluate the performance of the CPD framework in Ethiopia. For this reason, the study first attempted to explore the performance evaluation concerns by looking into the accomplishments of the current CPD framework to enhance the quality of education, teacher performance, and student achievement at a school in Addis Ababa, Ethiopia and aimed to address its weaknesses for further improvement. The study applied comparative case analyses by exploring several case studies and examined the practical application of the CPD framework by investigating the relationships between the CPD training program and teacher performance. Second, the study addressed the validity and effectiveness of the program and its impact on quality improvement. Third, the study evaluated the performance of the CPD framework through the lenses of process theory, program impact theory (Noah, 1984; Rossi, Lipsey, & Freeman, 2004; MOE 2005; Allen, 2016; MOE 2008; Hailu & Jabessa, 2010; Desta et al. 2013; Gemedda & Tynjala, 2015; Kassa et al., 2015; Wondem, 2015).

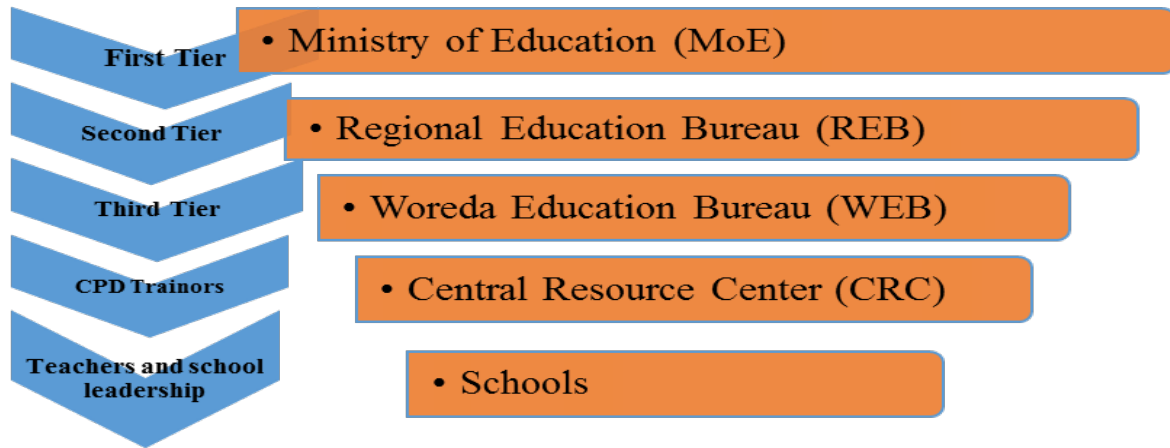
Notably, the United Nations Educational, Scientific, and Cultural Organization's Education Sector (UNESCO/ED) organized the 2016 "International Policy Dialogue" to acknowledge that teacher motivation was the underlying issue of quality in education. As a result, they developed a "framework for action" to increase teacher motivation and reduce teacher attrition rates (UNESCO Education Sector, 2016). Similarly, this study called attention to the need for redesigning the current CPD framework to serve as a medium to motivate and inspire teachers as the professional in education (Getahun, Tefera, & Burichew, 2016; MOE, 2015; UNESCO Education Sector, 2016). This research also proposed the applications of

technology to link the CPD programs to individual teacher's strength and weakness and to help teachers gauge their performance and professional growth. Such a system would provide a flexible platform to access CPD training programs and additional resources. Furthermore, it would build a network of support system and establish an instant feedback system (O'Neil & Perez, 2006; Cisco Systems, 2010; Leadbeater & Wong, 2010; Looi, Seow, Zhang, So, Chen, & Wong, 2010; GSMA, 2012; GSMA, 2014; Nokia, 2012; Nokia, 2013; UNESCO, 2013b; UNESCO, 2013c).

Background

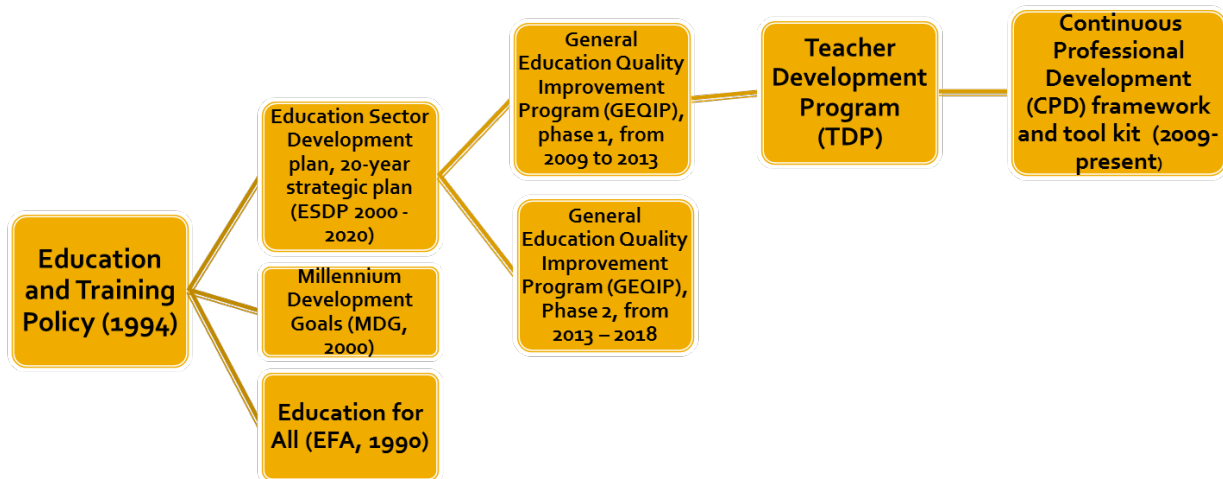
Ethiopia's decentralized government: Three-tiered governance. The Education and Training Policy of Ethiopia operates at a "three-tiered" federal system of governance (refer to Figure 1). The responsibilities of governance are strongly decentralized from the Ministry level to 11 regional states (9 regions and two chartered city administrations), to over 900 woredas, a cluster of villages (Federal Democratic Republic Government of Ethiopia, 1994). At the federal level, the first tier, the Ministry of Education (MOE), carries the responsibility for formulating the continuous professional development framework and toolkit and the implementation and evaluation of programs at all levels as shown in Figure 1 (Oulai et al., 2011, p.22; Woldab, 2014). At the second tier, the Regional Education Bureau (REB) personnel are involved in planning and organizing teacher training programs and managing teachers and issuing certificates and licenses (Oulai et al., 2011, p.22 – 25). Woreda Educational Offices (WEOs), at the third tier, have the responsibility for running in-service teachers' continuous professional development programs at the Central Resource Centers (CRC) and school levels (Federal Democratic Republic Government of Ethiopia, 1994; MOE 2010; Oulai et al., 2011; Woldab, 2014).

Figure 1: Dissemination of the continuous professional development program modality within the Ethiopia’s decentralized government.



Ethiopian Education and Training Policy. As shown in Figure 2, the Ministry of Education of Ethiopia, under the umbrella of the Ethiopian Education and Training Policy, formulated a twenty-year long Education Sector Development Programs (ESDP). The programs address the quality of education by targeting increased number of qualified teachers and school leadership from 2000 to 2020 (Federal Democratic Republic Government of Ethiopia, 1994; UN, 2000; Assefa, 2008; Abebe & Woldehanna, 2013; MoE, 2010).

Figure 2: Ethiopia’s teachers’ continuous development program framework and toolkit implementation chronicle.



Ethiopia's Teacher Education System Overhaul (TESO) reform. Ethiopia became one of the piloted countries for the Education for All (EFA) and the Millennium Development Goals (MDGs) initiatives. Since then, the country experienced increased pressure for not meeting the EFA and MDG objectives to improve the quality of education, which led to the introduction of Teacher Education System Overhaul (TESO) reform. This reform initiated the first attempt to revamp the number of qualified teachers through the in-service teacher training program (Assefa, 2008). Subsequently, the General Education Quality Improvement Program, a nine-year initiative (from 2009 to 2018), introduced the Teacher Development Program (TDP) that formulated the planning, organizing, managing, implementing and evaluating processes involved in the teacher training and skill development programs (MoE, 2010). The base cost for Teacher Development program from 2009 to 2013, was at \$62.2 million US dollars and during 2013 and 2018 it amounted to \$70 million US dollars (The World Bank 2008; The World Bank 2013).

Education revitalized the CPD framework. In 2009, the Ministry of Education revitalized the CPD framework and designed a school-based Toolkit to aid in its implementation process (Bastian et al., 2013; Abebe Woldehanna, 2013; World Bank 2014; UNESCO, 2012; UNESCO, 2015). Since then, the Ministry established the "Teacher and Education Leader's Development program (TELDP)" to regulate "licensing and relicensing" for "qualified, professionally trained, motivated and well-supported teachers" (UNESCO, 2015a, p.26). During its final year (2016-2017), the General Education Quality Improvement Program II (GEQIP, phase 2) served as vehicles to strengthen the in-service pedagogical training provisions of school-based CPD programs (also qualified as CPD 'updating' program). It also helped develop a career and licensing structure (also qualified as CPD 'upgrading' program) by accounting for 60-hours of in-service CPD time per year (MoE, 2009 and MoE 2010).

Problem Statement

This study identified a gap between Ethiopia's CPD framework expectation and the real-life outcomes and highlighted the need to link the framework to key performance indicators that are essential for the success of the program. Critics like Harris and Sass (2007) point out that professional development training offered limited benefits for teachers. In their study, they noted that first-year teachers only gained ten to twenty-five percent improvement after receiving fifty hours of professional development training for over a year. On the other hand, others like Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009), argue that ineffective design of the professional development programs attributed to the lack of quality improvement in teachers' performance.

The case studies in Ethiopia also revealed the limited benefits of CPD programs on the quality improvement in teachers' performance. The findings from these studies showed that the CPD framework helped 'upgrade' the teacher qualification process. However, that it lacked evidence of improvement in the quality of the teaching and learning strategies for teachers (Hailu & Jabessa, 2010; Desta et al., 2013; Woldab, 2014; Wondem, 2015; Gemeda & Tynjala, 2015; Kassa et al., 2015). In particular, the findings reflected that the CPD framework as lengthy, difficult to understand and follow, inconsistent, unsupportive and too generalized to meet specific needs. Additionally, some studies indicated that the three-tiered governance of the CPD program left teacher detached and unmotivated to participate in a one-size-fits-all type of training (Woldab, 2014; Wondem, 2015; Desta et al., 2013; Gemeda & Tynjala, 2015; Hailu & Jabessa, 2010, and Kassa et al., 2015).

With these shortcomings in mind, the goal of this study was to call attention to tailoring the design of the CPD training to meet specific needs for teachers (Wayne, Yoon, Zhu, Cronen,

& Garet, 2008; Loucks-Horsely et al., 2010; USAID-AIR, 2012; OECD, 2013). Similarly, findings showed that professional development "delivered in-conducive settings by those who designed" the program resulted in considerably impacting the quality of education (Wayne et al. 2008, p. 469). Webb (2008) also pointed out that the planning stage of the CPD needs to address the relevance of the program (CCOSS, 2008). Likewise, the Organization for Economic Co-operation and Development (OECD, 2013), suggested that tailoring the professional development programs to "individual teachers' strength and weaknesses" produced more successful outcomes (OECD, 2013, p.69).

Purpose of Study

This research centered on tightening the program's expectation and achievement gaps and developing a holistic approach for the CPD program evaluation system by involving teachers in their professional development and growth. Teacher motivation and meeting their needs strongly influences teacher performance; therefore, the foundation of the CPD framework in Ethiopia should focus on narrowing these gaps. To this effect, William (2016) brought up an interesting point in raising a question about the quality of teachers. He stated that improvements in quality might involve either the replacement of teachers or the improvement of teachers' performance. While labor economist may lean towards the replacement of teachers to improve the quality of education, William (2016) added that "creating a culture of continuous improvement" to improve the "work performance" of teachers present a more realistic future for education.

Thus, this study proposed a careful and purposeful CPD planning and evaluating framework. It recommended integrating steps to link the CPD program to individual teacher's strength and weakness. These initiatives would promote performance enhancement and

professional growth. More specifically, these steps would address concerns and questions of relevance, efficiency and effectiveness to a specific school, teacher, and student needs. It would also incorporate access to student and school data to establish an instantaneous feedback system (Dohj and Verspoor, 2013; Loucks-Horsely et al., 2010; Webb (2008); CCOSS, 2008; Wayne et al. 2008; OECD, 2013; Desimone, 2009; Desimone, Porter, Garet, Yoon, & Birman, 2002; Guskey ,2000 and Guskey; 2002).

Smith (1975) raised another important point that teachers are "frequently criticized for some inadequacies and led to believe that they could improve their performance if only they would master up-to-date techniques" (p.245). Regardless, he added "infallible methodologies for instruction do not exist...There is only one reliable way to improve instruction, and that is to assist the instructor in understanding children and avoiding excessive demands and restrictive practices" that interrupt the teaching and learning process (Smith 1975, p. 245). In effect, this study explored various perspectives, conceptual and theoretical frameworks to debate the relevance, validity, and effectiveness of the CPD framework to attain quality improvement of teachers' performance.

The Theoretical Framework

This study recognized the need for promoting a culture of continuous learning for teachers to improve their performance and supported Ethiopia's effort to achieve this. However, the case studies reveal a disconnect between the program's general assumptions and observed outcomes. For this reason, the research pointed to the lack of explicit evidence to pinpoint the cause and effect relationship between the CPD program and teacher performance to support Ethiopia's claim when evaluating the CPD framework through the lenses of program theory and impact theory. Furthermore, the study indicated a gap in Ethiopia's assertion that the design of

the CPD framework would impact the quality of education and student outcomes. As a result, this research aimed at providing a comprehensive analysis to gain a better understanding of the CPD framework in the context of Ethiopia by setting comparisons between similar or different CPD programs (Rossi et al., 2004; Noah 1984).

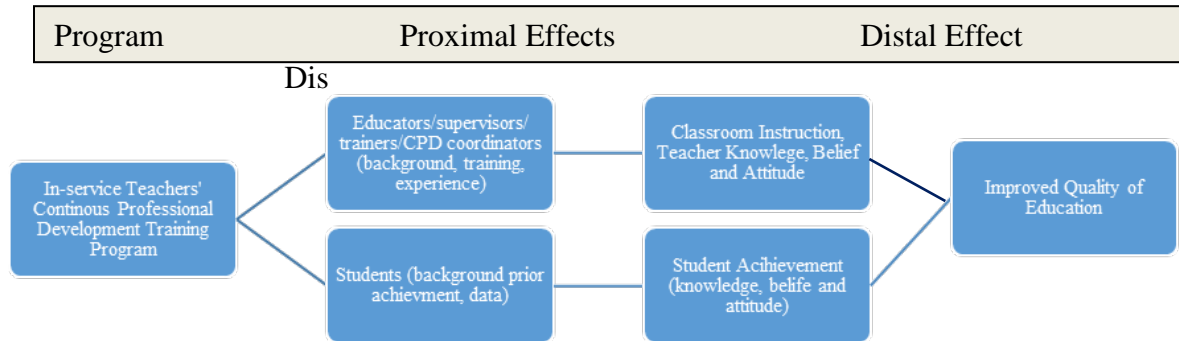
Program Evaluation: Seeking evidence and its challenges. This study investigated program evaluation tools to provide a mechanism to link theoretical and practical application of the CPD framework. Program evaluation, according to Weiss (1998), involves a “systematic assessment of the operation and (or) the outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement of the program or policy” (p, 4). Similarly, this study centered on evaluating the performance of the CPD program and tracking the scale of improvement based on the expected outcomes.

Program impact theory and comparative education analysis. Program impact theory is a way of evaluating the CPD framework. It explains a "causal theory" (p. 141) by describing a "cause and effect" relationship in which "certain program activities are the instigating causes and certain social benefits are the effects they eventually produce" (Rossi et al., 2004, p. 141). The theory's general assumption lies in the fact that the program would improve social outcomes (Rossi et al., 2004). The theoretical framework, for example, is based on the "understanding of the social problem the program intends to address" and service "needs of the target population" (Rossi et al., 2004, p153). Explicitly stated assumptions and expectations collaborated by stakeholders and setting clearly defined goals for the outcomes is one of the critical steps for initiating evidence-based program performance evaluation process (Wiggs & Mictighe, 2005; Deimone, 2009; Guskey, 2000; Guskey 2002; Garet, Porter, Desimone, & Yoon, 2001; NSDC, 2002; Killion, 2002; CCOSS 2008).

Process theory and comparative education analysis. The principles of process theory provide an alternative approach to evaluating a program based on identifying "aspects of program performance that are most important," and providing "some indication of what level of performance is intended" (Rossi et al., 2004, p, 173). This step eliminates bias and imposing own value system and focused on objectively assessing measurable, evidence-based performance outcomes (Rossi et al., 2004, p, 173). Hence, the process theory explicitly defined the outcome expected to benefit intended target population. For this reason, it provided an "effective outcome monitoring" system but required careful selection of indicators to make sure that the evaluation process was reliable, valid and sensitive to specific needs (Rossi et al., p. 231).

In other words, the principles of process theory provided a validation system of the program based on explicitly stated benefits of the target recipients (Rossi et al., 2004). Similar to the principles of process theory, successful application of comparative education considers the social, economic and cultural implications unique to the targeted population without imposing own value system (Noah 1984; Allen 2006). Both, process theory and comparative analysis provided effective outcome monitoring system but required careful selection of indicators based on specified needs.

Figure 3: Illustrating organizations schematics for the teachers’ continuous professional development program framework and toolkit (based on program impact theory and process theory).



Performance indicator: Seeking evidence and its challenges. This study aimed at broadening factors that influence teacher performance. Effect size is one tool that compares various performance measures.

Effect size. Hattie (2009) established "effect size" from a study of more than 800 meta-analyses of 50, 000 research studies. He identified about 150,000 effect sizes on teaching strategies of over 240, 000,000 students. Hattie (2012) established "effect size" at 0.40 as the ‘hinge-point’ for identifying what is and what is not the effective methodology of teaching and learning practices (Hattie, 2012, p.3).

Hattie (2012) explained that a baseline of zero means that any methodology would have a degree of effectiveness; therefore, the question is not if a particular teaching method is effective, rather it is how much more effective is it compared to others so that teachers become more selective in their practices. He added that effect size comparison "allows relative comparisons about various influences on student achievement" (Hattie, 2012, p.4). Thus, looking at the value of the effect size of the methodology allows independent comparisons on different measures for teachers and school leaders (Hattie, 2012).

Significance of the Study

The Ethiopian government spent over \$132.2 million US dollars since 2009, to support the CPD framework as its national intervention plan to improve the quality of education (MOE 2010; The World Bank 2008; The World Bank 2013). However, studies brought to light that even "high quality" professional development programs alone do not guarantee the effective outcome (Garet et al., 2001; CCOSS 2008, Desimone, 2009). Henceforth, the study focused on seeking evidence rather than proof of the impact of the CPD program in the quality of education (NSDC, 2002; Killion, 2002).

Multiple studies identified that setting defined goals for the expected outcomes helped evaluate the effectiveness of the professional development program (Wiggins & Mctighe, 2005; Desimone, 2009). By the same token, setting clear goals determined effectiveness of the management and implementation processes, which influenced "teacher knowledge and instruction in ways that translate into enhanced student achievement" (Desimone, 2009, p.28; Guskey, 2000; Guskey 2002; Garet et al., 2001; NSDC, 2002; Killion, 2002; CCOSS 2008, Desimone, 2009).

Teacher leverage equally enhances the success rate of the CPD program (Craig, Kraft, and Du Plessis, 1998; Ginsburg, 2010). Studies reveal that teachers are empowered when they participate in the planning and design stages of the evaluation processes (Craig, Kraft, and Du Plessis, 1998; Ginsburg, 2010). In effect, increased leverage also serves as a stopgap in countries like Ethiopia where "the low quality of data" does not provide "reliable empirical evidence" (Ginsburg, 2010, p.17). To this extent, evidence-based evaluation of the CPD program requires teachers to identify their professional growth and needs (Craig, Kraft, and Du Plessis, 1998; Ginsburg, 2010). Thereupon, involving teachers at the early stages of the decision- making

process increases their buy-in, ownership, and commitment to implement the CPD program in a purposeful and meaningful manner (Craig et al., 1998; Ginsburg, 2010).

Study Assumptions and Scope (Delimitations)

The large population of teachers in Ethiopia with approximately 500,000 teachers presented a challenge for this research concerning access and sample size. For these reasons, this study focused on a qualitative case study from one school located within the city of Addis Ababa, Ethiopia. This research additionally explored comparative analysis studies from countries of similar socio-economic and culturally diverse backgrounds as a tool for "discovering new methods of inquiry" (p.5) to better understand Ethiopia's value system (Noah 1984, p. 5, 554-561; Allen, 2016). The study utilized comparative analysis from selected countries that have similar challenges as Ethiopia to avoid misrepresentation or misinterpretation based on imposed value system (Beech, 2006). The researcher steered clear of unfounded assumption that the best practices in education could easily transfer to Ethiopia without consideration of the social and cultural implications of the country (Beech, 2006).

The researcher also recognized the importance of teacher motivation in achieving quality improvement in education and suggested incorporating teacher involvement in the early stages of the CPD program development to initiate interest and relevance. Hence, this study underlined the need for re-designing Ethiopia's current CPD framework. As part of the redesign plan, the study proposed the applications of mobile technology, an application-based CPD program, as a tool to inspire and involve teachers to participate in the customization of the CPD program to individual strength and weakness. This application-based CPD program holds the potential to promote professional and performance growth; address concerns and questions particular to

need, and provide evidence, data, to evaluate the program's relevance, efficiency, and effectiveness.

Study Limitations

The size of the teacher population in Ethiopia of about 500,000 and the limited data source presented constraints that narrowed the scope of an evidence-based research study. For this reason, this study did not attempt to prove that the CPD framework alone guarantees quality improvement in education. Nor did it try to show that the CPD framework causes effective student achievement outcomes. Instead, this study centered on exploring the relationship between CPD training and teacher's performance as one of the factors that influence the quality improvement of education in Ethiopia and proposed changes to the dynamics of the teaching and learning environment (NSDC, 2002, 0.24).

Chapter Two: Literature Review

This literature review sought evidence-based program evaluation system regarding Ethiopia's claims that teachers' Continuous Professional Development (CPD) training program improves the quality of education through improved teacher performance that impacts student learning achievement. The study expanded on various perspectives, conceptual and theoretical frameworks to debate the validity, effectiveness, and impacts of CPD program on the quality of education, as well as, teachers' performance and students' outcomes.

Studies showed that Ethiopia vested the General Education Quality Improvement Project, spanning from 2009 to 2018, as a primary teacher development strategy to improve the delivery of quality education essential to building the nation's workforce (MOE, 2009; World Bank 2008 and 2013; Dohj and Verspoor, 2013). Findings showed that the Ministry of Education assessed the program's effectiveness based on the National Learning Assessment (NLA) scores at grades four, eight and twelve at a two-year interval. However, the NLA scores reflected limited improvements in the quality of education (Dohj and Verspoor, 2013).

Other studies revealed that the CPD framework helped 'upgrade' the teacher qualification process, from certification (one-year certification) to diploma levels (two-year certification). However, it raised concerns with regards to the lack of supporting evidence that CPD program had an impact on teachers' performance (Hailu & Jabessa, 2010; Desta et al., 2013; Woldab, 2014; Wondem, 2015; Gemeda & Tynjala, 2015; Kassa et al., 2015). Thus, the researcher looked into the accomplishments of the CPD framework in Ethiopia by conducting a case study and utilizing comparative study analyses of similar programs in other countries. In this case, comparative study lent a practice of analysis to identify efficiency and performance indicators

relevant for assessing the CPD framework (UNESCO, 2014; UNESCO, 2015; UNFPA, 2013; UNICEF/UNESCO 2013; The World Bank, 2013; The World Bank, 2014). As a result, the research discussed the need for redesigning the current CPD framework to provide a support system for teachers, to motivate, and inspire teachers as the professional in education (Getahun et al., 2016; MoE 2015; UNESCO Education Sector, 2016; MOE, 2009; World Bank, 2008 and 2013; Bastian et al., 2013).

Moreover, this literature review explored the applications of technology in transforming and remediating scenarios that imposed difficulties to sustain evidence-based performance evaluation system to validate the effectiveness of the CPD framework in Ethiopia. For this reason, this study proposed the use of technology to link the CPD programs to individual teacher's strength and weakness and provide a flexible platform to access CPD programs and open-source resources. It promoted access to help teachers gauge their performance and professional growth. The study additionally suggested integrating student and school data to provide feedback systems (O'Neil & Perez, 2006; Cisco Systems, 2010; Leadbeater & Wong, 2010; Looi et al., 2010; GSMA, 2012; GSMA, 2014; Nokia, 2012; Nokia, 2013; UNESCO, 2013b; UNESCO, 2013c).

The Education and Training Policy of Ethiopia

At the macroeconomic level, Haddad et al. (1990) point that “the contribution of education to social and economic development” is evident: income increases with “higher level of literacy” (Haddad et al., 1990, p. 3). Based on similar thinking, the Federal Government of Ethiopia established the “Education and Training Policy” in 1994, strongly influenced by “Education for All’s” (EFA) initiatives set by the United Nations Education, Scientific and Cultural Organization (UNESCO). This initiative increased individual and societal participation

“in the development process by acquiring knowledge, ability, skills and attitudes” (The Federal Government of Ethiopia, 1994, p.1). The objective of this policy was to subscribe the mandates necessary to improve school structure, curriculum, assessment, teacher training, and class size (Federal Democratic Republic Government of Ethiopia, 1994). To this account, the government outlined a progressive policy outlook as follows:

The Education and Training Policy incorporates the structure of education in relation to the development of student profile, educational measurement and evaluation, media of instruction and language teaching at various levels, the recruitment, training, methodology, organization, professional ethics and career development of teachers. Due attention is also given to the provision and appropriate usage of the educational facility, technology, materials, environment, organization, and management so as to strengthen the teaching-learning process and the expansion of education. (The Federal Democratic Republic Government of Ethiopia, 1994 p.2-5)

Six years later, inspired by the Millennium Development Goals (MDG) initiative set by the United Nations, Ethiopia affirmed its commitment to expand access and equity of primary and secondary education through a twenty-year Education Sector Development Program (ESDP) policy (UN, 2000; MOE, 2000). In 2003, the Ethiopian Ministry of Education carried out teacher quality and effectiveness study that cast significant weakness in the teachers’ qualification and pedagogical skill development system. This action introduced the teacher development program and the continuous professional development program in 2005, and the subsequent 2009 revitalization of the professional development framework (MoE, 2006; MoE 2009).

By 2011, Ethiopia made remarkable progress in widening access to education (Bastian et al., 2013). The primary school enrollment rates accounted for the highest increase in the Sub-Saharan Africa region at 103.4 percent (UNESCO Institute for Statistics, 2012). The country's educational spending grew from 11 % of the nation's total expenditure in 1999-2000 to 25% in 2010- 2011. During this period, the number of primary schools increased from 11,000 to over 31,000, the number of classrooms went from 72,000 to 300,000, and the number of teachers tripled in size from about 105,000 to 321,000 (Bastian et al., 2013). However, the net attendance rate for primary school declined to mere 40.7 percent during 2011 and 2012 (Bastian et al., 2013). The failing scores of 40 percent in the National Learning Assessment at Grade 4 level, combined with 80 percent below expected fluency rate in the Early-Grade Reading Assessment raised concerns. Bastian et al., (2013) linked the failing scores to the 25 percent dropout rate in the primary schools in 2011/2012 (Bastian et al., 2013).

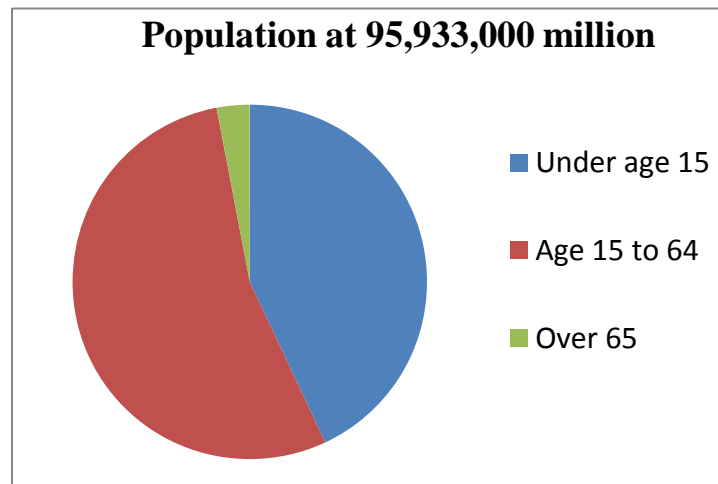
Demographic pressure. A high rate of population growth, which creates a higher child dependency rates impacts education planning. To this effect, The World Bank states:

Since 2005, 2.5 million people have been lifted out of poverty, and the share of the population below the poverty line has fallen from 38.7 percent in 2004/05 to 29.6 percent in 2010/11 (using a poverty line of US \$0.6/day). However, because of the high population growth, the absolute number of poor (about 25 million) has remained unchanged over the past fifteen years. (The World Bank, 2013)

According to the United Nations Population Division (UNPD), the population growth rate in less developed countries has exponentially grown since the 1950s. The Global Monitoring Report (2015) indicated that the population of children between the ages of 5 and 14 in the Sub-Saharan regions of Africa increased from 28% in 2000 to 65% in 2010 (UNESCO, 2015). As a

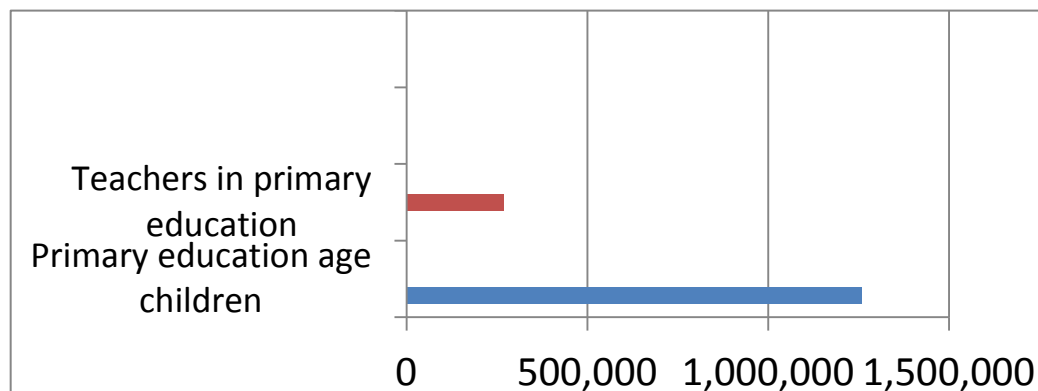
result, the sub-Saharan African countries have the highest child dependency ratio, with 73 children per persons of working age in 2015, almost double compared to global average rates (UNICEF, 2014). In the case of Ethiopia, its population growth rate reached about 2.89 percent, double the average world population rate of 1.14% (UN, 2014). Inevitably, increased demographic pressure with a total population of over 95,933,000 million and the youth dependency rate of 77.2 percent, as illustrated in Figure 4, exasperated the demand for primary and secondary school teachers also shown in Figure 5 (UIS/EFA, 2014; Population Reference Bureau, 2015). Finding a balanced equilibrium to meet increasing demands on the supply end of teachers and producing sufficient qualified teachers to meet demands presents an ongoing challenge for Ethiopia (Dohj and Verspoor, 2013).

Figure 4: Ethiopia's demographic breakdown.



Source: Population Reference, 2015

Figure 5: The Supply and Demand of Primary School Teachers in Ethiopia.



Source: UIS/EFA Fact Sheet on Primary Teachers 2014

The education system compounded by the demographic pressure coupled with a limited number of teachers to meet demands placed tremendous challenge in the region (UNESCO, 2014). According to the UNESCO Institute for Statistics (UIS) report, the numbers of teachers available meet only 46% of the demand, “requiring additional 1.6 million teachers” by 2030 (UNESCO, 2014). As a result, organizations like the Global Thematic Consultation on Education in collaboration with UNESCO, along with the United Nations Children’s Fund (UNICEF) and the United Nations (UN) pushed for education policies that promote “quality education and lifelong learning” to gain sustainable development by the 2030 year mark (UNICEF/UNESCO, 2013; UN 2015).

This UN-base group stated that inadequate focus on teachers and deficient training programs triggered a decline in the quality of education and they proposed policy reforms to produce a high-quality skilled workforce to sustain economic growth and development (Tesfaye, 2012; UNICEF/UNESCO, 2013a). A study run by the Open Working Group also supported the push for quality improvement and stated that “education,” directly or indirectly, “equips

marginalized people with competencies that increase their income” (The Global Thematic Consultation on Education, 2013).

Analysis of the education and training policy in the context of Ethiopia. Beech (2006) warned developing countries might fall into the trap of entities like UNESCO, the World Bank, and OECD that have become the powerhouse in pushing one-size-fits-all education policies and practices. Allen (2016) added that unfounded assumption that the best practices in education can easily transfer from one country to another country, without considering the social and cultural implications, may result in more failures than successes (Allen 2016; Noah 1984). The trap of transplanting practices across cultural boundaries without filtering out what could serve the society from what does not result in continuous “persistent poverty...grinding inequalities, conflict, and instability” (p.3); nevertheless, this practice continues to exist and pose challenges for policy-makers, educators, and leaders (UNDP-HDI, 2015, p.3; Allen 2016).

Ethiopia, with a population of over ninety million people, from over thirteen different ethnic groups, speaking ten major languages and over seventy dialects present a challenge for policy-makers, educators, and leaders. For these reasons, this study relies on comparative analysis studies coupled with qualitative data from a case study to gain a better understanding of the role that the CPD framework played as the quality improvement initiative plan for teachers in Ethiopia.

The 1994 education and training policy emphasized rectifying haphazard decision-making practice of the past and laid down strategies for a research-based educational system. Nonetheless, the same fragmented, piecemeal policy decision-making practice continued for the next two decades. One example was the fact that decision-makers addressed issues with accessibility and equity by pushing for primary school expansion within a relatively short period

without due attention to quality and relevance. This myopic decision-making approach in education was also evident as the nation moved to meet high demands for primary school teachers by minimizing the certification (qualification) requirements for teachers. Pre-service teachers coming into the teacher training program were required to reach 10th grade and completed one year of training courses to teach in first through fourth-grade levels. (Dohj and Verspoor, 2013; Bastian et al., 2013; Abebe & Woldehanna, 2013; MoE, 2010; Watson, 2005; Oulai et al., 2011).

Needless to say, the pre-service teacher training program lacked the appropriate skill development training to diagnose and effectively develop competencies in basic reading and numeracy. It contributed to failing scores at the fourth-grade level and low fluency achievement scores in the Early-Grade Reading Assessments (Bastian et al., 2013; Abebe & Woldehanna, 2013). Besides, the high dropout rates in the primary schools raised concerns about the quality of education as well as relevance and alignment to societal needs. Ethiopia attempted to rectify this major faux pas by scaling up the pre-service teacher primary school teacher qualification requirements and through CPD ‘upgrade’ training programs for in-service teachers. Since 2010, primary teachers were required to complete a three-year diploma program instead of a one-year certification program upon completion of tenth grade (MoE, 2010; Abebe & Woldehanna, 2013).

Furthermore, the fact that Ethiopia depends on funding from the international moguls for projects and programs pushed by the donor communities enforces haphazard, piecemeal policy-making practices. For instance, the Ethiopian Ministry of Capacity Building was established “to increase democratization and decentralization of system; provide policy directions; coordination and implementation support” (Watson 2005, p. 20). However, Watson (2005) noted that the Ministry of Capacity Building was “weak in the education sector” and failed to “kept abreast of

programs sponsored” (p.20) by the international donor communities (Watson 2005). As a result, haphazard, piecemeal policy-making practices continued to persist.

Donor-sponsored projects or programs tended to be distinct, independent and fragmented; therefore, policymakers ought to be cognizant of the country’s need to adhere to long-term, cohesive and holistic decision-making practices when adopting such projects and program (Beech, 2006). Ethiopia as one of the seven MDG pilot countries fell into this trap. Oulai, Lugaz, Minas & Teklehaimanot (2011) also reported that Ethiopia’s capacity development effort in educational planning and management, while it has improved over the years, it has not shown to be effective. Lack of qualified human capital and social capital (motivation) contributed to the poor planning, implementation and evaluation process in the education sector and hindered Ethiopia’ chances to meet EFA goals (Oulai et al., 2011).

The push for governance of a decentralized education system additionally presented policy challenges at the *woreda* level (village cluster). As specified in the education and training policy, the *woreda* takes more of the “operational responsibilities” for supervising teachers. Nevertheless, the policy lacked a strategic layout to train staff and faculty adequately. Moreover, the absence of the ‘know how’ led to a higher rate of frustration and a high rate of personnel turnover. Unfamiliarity with the *woreda*’s social norms and customs ultimately contributed to the high levels of mistrust in the educational system, and some parents in rural Ethiopia refused to let their children attend schools (Bastian et al., 2013).

Over all, despite the fact that the educational policy aligns with “Education for All” and “Millennium Development Goals” initiatives that are progressive and necessary, the government failed to provide a holistic, systematic, evidence-based approach and guidelines for implementing these initiatives in the context of Ethiopia. Noah (1984) cautioned researcher,

policy makers, leaders, and educators to avoid transplantation of educational practice that can result in misrepresentation or misinterpretation of the intended outcomes. He suggested that researcher, policy makers, leaders, and educators should conduct an in-depth comparative policy analysis “in ways that are valid, persuasive, practically usable” to better understand one’s societal need in the context of others (Noah, 1984, p.561). While EFA, MDG or other donor sponsored initiatives provided an “understanding of systems around the world” (p.3) and served as a tool for “discovering new methods of inquiry” (p.5), Ethiopia must consider the practical application and customize these initiatives to *fit-to-size* by embracing the unique characteristic of the Ethiopian societal needs (Allen, 2016).

The Continuous Professional Development (CPD) Framework of Ethiopia.

Section 4.4.2 of the Education and Training Policy stressed on prioritizing focus on teacher training and professional development initiatives as the key steps for school improvement strategy (The Federal Government, 1994, p.33). As a result, The Ethiopian Ministry of Education set the CPD training program as “the major pillar” (p.20) as part of the teacher development program initiative (MOE, 2009). Belew (2015) wrote that the CPD guidelines developed a “lifelong learning” strategy “to improve the quality of classroom instruction” (as documented in Yuchi, Jing & Endris, 2015, p.206).

Nevertheless, a study conducted by the Ministry of Education in collaboration with Haromya University identified weaknesses in how different regions of Ethiopia implemented the CPD program (MOE 2009). According to Belew (2015), four out of five schools reported that the CPD was “either absent or inadequate” (p.208). Twenty-nine out of thirty-one CPD Cluster Resource Centers were not “adequately prepared to run well-organized, inspiring and transforming CPD activities” (p.208) and lacked “systematic collaboration and coordination”

between program facilitators and teacher training institutes (as documented in Yuchi, Jing & Endris, 2015, p 208).

In its effort to address these challenges, the Ethiopian Ministry of Education reworked the CPD program based on the “recommendations from international and national research” studies and introduced a compulsory 2009 CPD Framework for primary and secondary schools (MOE, 2009, p. 3). The Ministry simultaneously developed a ‘toolkit’ that complemented the framework; it is designed to provide a step by step procedural guideline (MOE, 2009; p 10 -64).

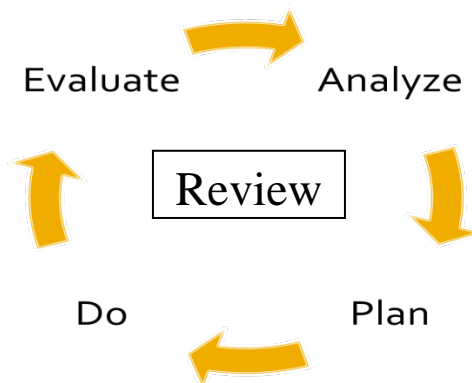
As Figure 6 illustrates, phase-one of the CPD model, the analysis stage, begins with conducting need analysis. This step requires selected personnel to identify the needs and prioritize according to the agency. The individual teacher is also expected to perform their need analysis and prioritize accordingly. Once accomplished, then the next planning stage, phase two, requires selected faculty and staff member as well as teachers to complete a year- long CPD plan. The participants of the CPD training must plan for a year-long sixty-hour training. Following these steps, the trainees have to incorporate mandated courses prepared by the government, in combination with programs deemed necessary by the regional leadership, and any other program from a short menu of CPD courses offered by teacher training institutions or non-governmental agencies (NGOs).

However, the CPD framework failed to incorporate a continuous feedback system to evaluate and monitor the CPD program’s performance, as indicated in the following mandated sequential segment of the implementation process:

In the next step, the ‘Doing’ stage, participants are asked to provide a detailed description of how to complete the CPD training. This step requires trainees to document the steps they took to complete the CPD training. The last phase of this CPD model, the evaluation

step, expects all the parties to conduct an evaluation of the CPD training (if it was successful or not). Meanwhile, the participants are asked to ‘review’ each step throughout this process: they are expected to continuously assess and reflect on their work, student work and record progress in their portfolios. (The Ministry of Education, 2009)

Figure 6: Ethiopia’s current CPD framework and toolkit.

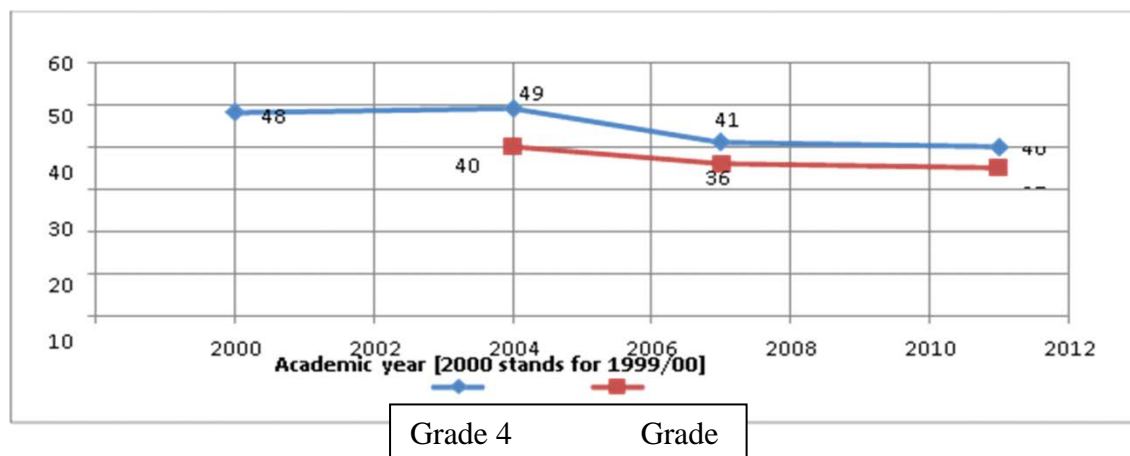


Source: Ministry of Education (MOE). (2009). Continuous Professional Development for Primary and Secondary School Teachers, Leaders, and Supervisors in Ethiopia: The Framework and Toolkit. Addis Ababa: MOE.

This new framework targeted initiatives and strategies to increase the number of qualified teachers and school leadership to reach the Education and Training Policy’s primary objective. This objective intended to improve students learning outcomes (Federal Democratic Republic Government of Ethiopia, 1994; UN, 2000; Assefa, 2008; MOE, 2010, and Abebe & Woldehanna, 2013). Despite these efforts, the Ministry of Education acknowledged that the modified CPD framework and toolkit did not achieve the intended outcomes. In the 2013-report to the World Bank, the Education Minister indicated that the fourth (in blue) and eighth (in red) grade National Learning Assessment Scores (shown in Figure 7 and Table 1) were below the national fifty percent standard. This report declared that the decline in the quality of education was the primary barrier to student learning outcomes and laid out a need-based five-year (2013-

2018) plan for a donor sponsored initiative: the General Education Quality Improvement Program (GEQUIP II) (MOE, 2010, The World Bank, 2013).

Figure 7: The National Learning Assessment Composite scores (percent %).



Source: The World Bank, 2013. International Development Association project appraisal document. The Education Sector Unit for East and South Africa Country. The World Bank: New York

Table 1

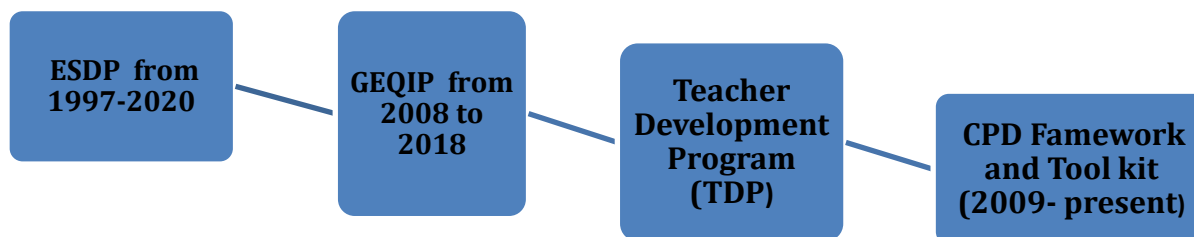
Percentage of Students Scoring below 50 Percent on NLA Tests, 2010

	Grade 10 % scoring below 50 percent	Grade 12 % scoring below 50 percent
English	82.2	74.1
Mathematics	85.3	42.3
Physics	89.9	83.3
Chemistry	82.9	56.6
Biology	75.2	39.3

Source: NEAEA 2010

As mentioned above, the Ministry of Education in collaboration with the international donor community pushed for two policy initiatives (illustrated in Figure 8) as part of the teacher development program. It included the General Education Quality Improvement Programs I and II (GEQIPs) and the Education Sector Development Program series (ESDPs) to address the decline in the quality of education (World Bank, 2008 and 2013).

Figure 8: Illustrating Ethiopia's education policy initiatives.



The objectives for ESDP V (2015/16 to 2019/20) included:

- improvement in teacher quality;
- development of core foundational skills;
- reduction in dropout and repetition rates, and
- provision of quality assurance through licensing, inspecting school environments, and assessing student achievements (MoE 2005; MoE 2009; Oulai et al., 2011; Tesfaye, 2012; MoE, 2015).

As part of this effort, the GEQIP II initiative (2013 to 2018) was subject to enhancing the teacher training programs; planning and designing pedagogical practices for in-service teachers, and strengthening school improvement plans (MOE 2010; The World Bank, 2008 and 2013; MOE 2015; UNESCO, 2015a). Nevertheless, the same challenges continued to persist in Ethiopia.

Ethiopia continued to fall into the trap of one-size-fits-all education policies and practices based on the assumption that the best practices in education easily transfer from one country to another country, without considering the social and cultural implications (Beech, 2006; Allen 2016; Noah 1984). As a result, decision-makers continued to rely on fragmented, piecemeal policy decision-making practices and short-termed programs instead of a holistic, long-term, systematic, evidence-based approach to address the undercurrent issues by re-

examining the lesson learned -- what worked and did not work or what changed and did not -- to guide the decision-making processes.

Similar practices also persisted in other sub-Saharan African countries and posed challenges for policy-makers and leaders. The case studies from Botswana, Burkina Faso, Ghana, Namibia, Nigeria, Senegal, South Africa, Uganda, Tanzania, and Zimbabwe shared common short-comings. These challenges remained due to the “limited lifespan,” “one-off” and “ad-hoc” provisions for programs mainly initiated by “donor-funds” (Ottevanger, Van-Den-Akker, & De Feiter, 2007, p.55). Thus, the CPD programs lacked ownership and claim to integrate the training into the teaching and learning practices (Ottevanger et al., 2007).

Analysis of the CPD Framework: Seeking evidence in the context of Ethiopia. Haddad and Demsky (1995) proposed a conceptual framework for policy-makers to analyze policy. They indicated that policy analysis must consider the complexity level and decision criteria when evaluating the program’s feasibility or desirability (Haddad and Demsky, 1995).

Validity and Effectiveness. Validity and effectiveness of a program, based on the empirical evidence, provide support for the implementation practices. On the other hand, evidence helps decision-makers reconsider options to make improvements, or make amends to the program (Haddad and Demsky, 1995).

Program internal validity. Sections 1.1 and 1.2 of the CPD framework stated that the general rationale for the new framework stemmed from impact study and need analysis study conducted by the Ministry of Education coupled with five international case studies around the world (MOE, 2009, p 6-.7). None the less, the Framework failed to specify the program’s overall evaluation methodology to track progress. It lacked a methodological approach to tailoring the program according to various needs, relevance, and culture in the context of

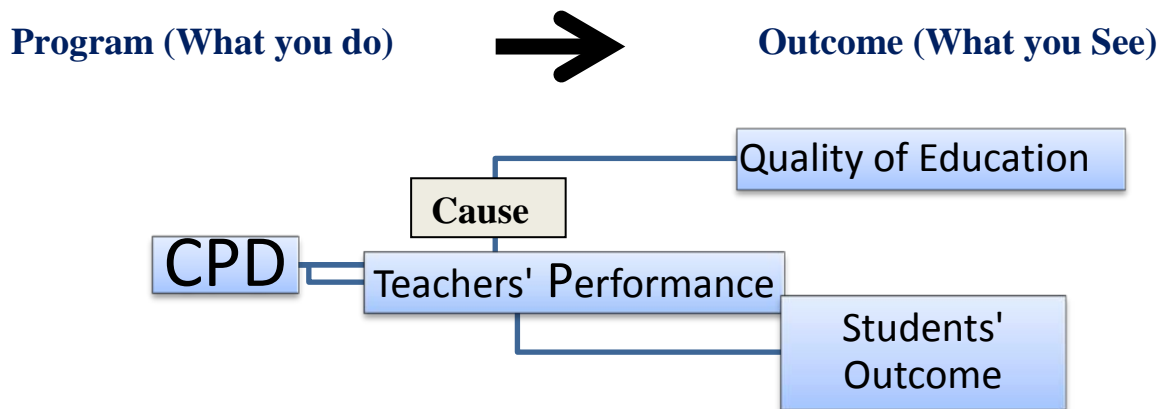
Ethiopia. The Framework also failed to initiate teacher leverage to cultivate individual interest in their professional growth and development. Furthermore, it failed to motivate teachers to take ownership of the program by providing a continuous support system in the implementation process (Hailu & Jabessa, 2010; Desta et al., 2013; Woldab, 2014; Gemedo & Tynjala, 2015; Kassa et al., 2015; Wondem, 2015). To this effect, the 2013 World Bank report indicated that there was “no clear evidence” that the teacher development program contributed to improving the “learning in the classroom” (World Bank, 2013, p. 28; MOE 2005; MOE 2008)

Granted that the Ministry of Education developed the 2009 CPD framework based on a generalized conclusion of the program’s outcomes, it failed to identify evidence of validity in the context of Ethiopia. As part of the evidence-seeking strategy, the Ministry should have established the co-variation of the cause and effect relationships to provide “evidence that the program and outcome are related” (Trochim, 2006). For example, decision-makers could specify the co-variation of the causal relationship as such:

- CPD program improves teachers’ performance, or
- The in the absence of the CPD program, teacher performance will not improve (Trochim, 2006).

As a result, one could establish an internal validation investigation based on these relationships (as illustrated in Figure 9). It helps determine if the CPD intervention (the program) caused the improvement in teachers’ performance (the result), which in turn, was necessary (the cause) to improve students achievement scores (outcome) that spurred an overall change in the quality of education (what you see).

Figure 9: Illustrating Internal Validation of CPD Framework.



In the case of Ethiopia, the Ministry utilized the National Learning Assessment (NLA) outcomes to serve as an indicator to address its challenges with the quality of education. On the contrary, researchers highlight that students' achievement scores alone do not necessarily tell the whole story. For example, these scores do not prove if the professional development was responsible for it or not to, or what needs to be done to improve the outcome. This type of linear deduction, measured in isolation, also pointed to the lack of validity checks (NSDC, 2002; Trochim, 2006).

Still, validity checks alone do not explain the CPD program achievement levels. Nor do they eliminate “realities of human interaction making it more difficult for us to assess cause-effect relationship” (Trochim, 2006). Multiple factors not associated with increased student learning may influence the outcome (p.24); as a result, the relationship between CPD and student achievement may be proven to be “correlational rather than causal” (NSDC, 2002, p.24). Validity checks, therefore, require supporting data to establish the type of relationship (Trochim, 2006).

Program effectiveness. The case studies reviewed in this study cover three different regions and two cities in Ethiopia (Amhara Region, Bahir Dar city, Addis Ababa, city administration, Addis Ababa, Yeka city administration, Oromiya Region, Zone Jimma, and Hararie Region). The findings reflected that the CPD framework and toolkit was lengthy, difficult to understand and follow, inconsistent, unsupportive and too general to meet particular teachers' and students' needs in these regions (Woldab, 2014; Wondem, 2015; Desta et al., 2013; Gemeda & Tynjala, 2015; Hailu & Jabessa, 2010, and Kassa et al., 2015). Additionally, the top-down approach in its structure and a one-size-fits-all type of training left teacher unmotivated, and they felt forced to participate (Woldab, 2014; Wondem, 2015; Desta et al., 2013; Gemeda & Tynjala, 2015; Hailu & Jabessa, 2010, and Kassa et al., 2015).

Dohj and Verspoor (2013) suggested that Ethiopia's education policy needs to integrate professional development opportunities to evaluate teacher performance as opposed to supporting a "professional development system" that "mainly focuses on the supply side" of the teaching profession. Similarly, Lynd (2005) documented that one problem in the teachers training programs was that low-income countries focus more on the supply end (the number of teachers trained) whereas in high-income countries focus more on both the demand and the supply ends.

In the analysis of the evaluation process of professional development programs, the Organization for Economic Co-operation and Development (2013) suggested that tailoring the professional development programs to "individual teachers' strength and weaknesses" produces more practical outcomes (OECD, 2013, p.69). Similarly, Guskey (2000; 2002) explained that evaluating the effectiveness of a professional development program is determined by setting defined goals for the learning outcomes. Otherwise, he warned that the evaluation process might

fall into traps leading to “inadequate and ineffective” results (Getskey, 2000, p.9). In the absence of professional development evaluation methodology, the assessment of the CPD program may end up as “too shallow” “too brief” or “rushed,” to provide sufficient evidence of effectiveness and relevance (Getskey, 2000, p.9).

Johnson, Monk, and Hodges (2000) also warn policy makers and program developers of poorly suited Northern/Western ‘best practice’ strategies that do not prove to be advantageous for the targeted population. While the principle of the policy or program is sound practice, the decision-making process should factor in the impact on those that it affects (Johnson et al., 2000). They recommend evidence-based systematic review, which proves to be helpful when there is “uncertainty” in “the effectiveness of the policy.” Petticrew and Roberts (2005) additionally state that evidence-based review is critical “when evidence of the likely effects of an intervention is required,” or if “key questions remain unanswered” (p. 21). They suggest that the PICOC model is useful, “when a general overall picture of the evidence is needed” (p. 21). For example, as illustrated in Table 2, seeking evidence by using this model to specifying the key indicators can help program evaluator address questions concerning the effectiveness of the CPD program with more certainty (Petticrew and Roberts, 2005).

Table 2

PICOC model

Population	Who? What population is it serving?
Intervention/program	What or How?
Comparison	Compared to what?
Outcome	Accomplishments/improvements?
Context	In what kind of organization/circumstance?

Source: Systematic reviews in the social sciences: A practical guide. Petticrew, M., & Roberts, H. (2005). Malden, MA: Blackwell Publishing

The PICOC model suggests that the certainty of the effectiveness of the program improves if the “audience,” or the intended target population is first identified (Petticrew and Roberts, 2005; Rossi et al., 2004). This ‘target’ specification step establishes boundaries that are necessary to determine the need for the intervention (Rossi et al., 2004). Then, the question about “what” the program is designed to achieve and addresses “how” it implements the next steps must follow (Wayne et al., 2008). Findings additionally pointed out that professional development delivered “by those who designed” the program has a considerable impact on students’ achievements (Wayne et al. 2008, p. 469). Similarly, Dohj and Verspoor (2013) recommend incorporating teacher involvement as a “critical element of effective teacher performance” to motivate teachers in Ethiopia.

Following these steps, the PICOC model requires generating effectiveness measures by making a comparison with other compatible programs. Wholey (1979) named this process ‘*evaluability assessment*,’ a process for setting preconditions for the goals and objectives to measure the effectiveness of the program. In the absence of set preconditions, Hattie’s (2012) “effect size” can serve as a measure of effectiveness for teachers and school leaders by offering a means of comparing the influences of various teaching and learning practices on student achievement (Hattie, 2012, p.4). Hattie (2009) established "effect size" at 0.40 as the ‘hinge-point for identifying what is and what is not effective' method of teaching (Hattie, 2012, p.3). A baseline of zero means that any methodology would have a degree of effectiveness; but, the question is not if a particular teaching method is efficient, rather it is how much more effective is it compared to others so that teachers become more selective in their practices. At the grass-root level, for instance, the effectiveness of the CPD program can produce evidence-based reviews by

allowing independent comparisons of different teaching method included in Table 3, so that teachers become more selective in their practices (Hattie, 2012).

Table 3

Hattie's ranking of teaching and learning practices base on effect size

Teaching and learning methods	Effect Size
Teacher estimates of achievement	1.62
Collective teacher efficacy	1.57
Teacher credibility	0.9
Classroom discussion	0.82
Teacher clarity	0.75
Feedback	0.75-0.73
Providing formative evaluation	0.9
Teacher – Student Relationships	0.52 – 0.72
Professional development	0.42-0.62
Motivation	0.44- 0.48
Teacher expectations	0.43
Principal and school leaders	0.33 – 0.39
Student-centered teaching	0.36-0.54
Class size	0.21
Teacher education	0.12 -0.11
Subject matter knowledge	0.09

Source: Hattie Ranking: Interactive Visualization – Visible Learning, 2009, 2011 & 2015. Visible learning.org

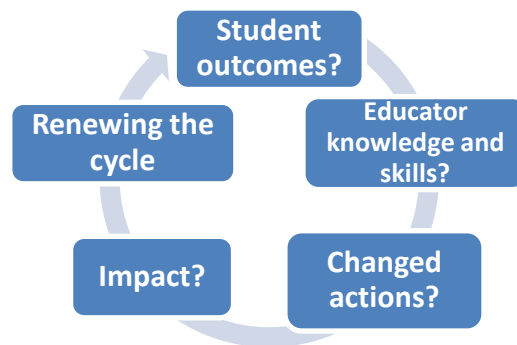
The final two components of the PICOC model require explicitly specifying the outcome(s) within the context of the unique circumstances, cultures, or settings (Petticrew and Roberts, 2005). These steps are necessary for evaluating the effectiveness of an intervention, or a program. Guskey (2012) points out that identifying the intended outcome produces “evidence” (p.41) that influences the effectiveness of the program. Likewise, Noah (1984) confirms that contextual examination of validity and practicality serve to provide a better understanding of the program (Noah, 1984, p.561).

When developing a program, Hattie and his team suggest creating a collaborative impact team to “facilitate system-wide change” and to “build capacity and capability within the system” (Hattie, Masters & Brich, 2016, p.4). Timperley, Wilson, Barrar, and Fung, (2007) point out that

adequate professional training can take from three up to five years. Therefore, a continuous gathering of evidence for three to five yearly cycles, as illustrated in Figure 10, is critical (Hattie et al., 2016). Evidence-based effectiveness measure involves planning and implementing the change, then “monitoring and tracking the impact of that change,” and incorporating it back into a feedback system (Hattie et al., 2016, p.6). Hattie (2012) clarifies the role of a cyclic feedback system necessary for facilitating a system-wide change as such:

For feedback to be received and have a positive effect, we need transparent and challenging goals (learning intentions), an understanding of current status relative to these goals (knowledge of prior achievement), transparent and understood criteria of success and commitment and skills by both teachers and students. (p.134)

Figure 10: Illustrating continuous gathering of evidence: A feedback cycle system.



Source: Figure 0.3 The Visible Learning impact cycle. Hattie, J. Masters, D., & Birch, K. (2016). *Visible Learning into Action*. New York: Routledge

To this effect, Levin (2008) points out that policy and governance cannot produce sustainable outcomes with a single change, a new curriculum, an accountability system, a few influential leaders, or incentives. He advocates for building capacity by raising expectations;

increasing motivation; building networks of relationships, and effectively using data and feedback. Fullan (2011) also underlines the power of a whole system reform as “one that inevitably generates individual and collective motivation and corresponding skills to transform the system” (p.5). He notes that using tests scores; fragmented strategies, and singling out individuals or a single entity to appraise, reward or punish disrupts the whole system reform. Fullan adds that a central base for the success of a system as a whole requires a systematic synergy between individuals, diverse cultures, and the nexus between evidence-based-assessment and innovative technology to support the entire system (Fullan, 2011).

CPD program evaluation. Guskey (2005), states that starting with the intended goals in mind serves as “the foundation for developing a meaningful and effective evaluation that demonstrate the difference” between a well-designed program from one that is not (Guskey, 2005, p. 17). He points out that program developers and evaluators need to expect “a wide variety of perceptual and contextual issue” since “the validity and believability of different sources of evidence vary among stakeholder” (Guskey, 2005, p.42). Therefore, Guskey (2012) insists that program developers and evaluators must identify the intended outcome that influences the effectiveness of the evaluation process. He adds that they need to carefully analyze student information as “evidence” before implementing a professional development program (Guskey, 2012, p.41).

Still, the evaluation process is more involved because “compatibility between the program design and evaluation design” needs to be addressed (Webb, 2008, p.5; CCOSS, 2008). Loucks-Horsely and her team noted that exploring first the “why” a professional development program is necessary helps determine “how” the program would address specified issues to

achieve the expected outcome, and “how” it should be evaluated (Loucks-Horsely et al., 2010).

Guskey (2012) explains:

Just as we urge teachers to become more purposeful in planning instructional activities, we need to become more purposeful in planning professional learning. We must determine up front what improvements we seek in terms of student learning and what evidence best reflects that improvement to the satisfaction of all stakeholders involved. It will improve the likelihood of our success and yield more valid evidence on the effectiveness of current activities while informing future professional learning. (p.43)

Based on this thinking, evaluators must “begin with the outcomes” and explore “what evidence best reflects the achievement of those outcomes?” (Guskey, 2012, p.41). Validating the differences in perception among stakeholders is an important consideration in the evaluation process. This realization helps program evaluators avoid a biased measurement by accepting a broad range of varying conceptual evidence that may challenge the assessment process. For this reason, the evaluators should be open to “use multiple sources of evidence,” based on the varying “needs and perceptions” of stakeholder (Guskey, 2012, p.42).

Guskey (2012) further notes that the evaluators should ensure transparency by explicitly selecting the evidence. He suggests that evaluators should form “a comparison group” to compare outcomes between similar groups that are not involved in the same program or other randomly selected groups. This step helps ensure “reliability and validity” and reduce influence from extraneous factors when assessing the outcome (Guskey, 2012, p.43).

Program Theory: assumptions and expectation and formulating evaluation questions.

This study delineates evaluation questions whether the CPD program’s “assumptions and expectation are appropriate and, if so, whether the program” is effectively enacting them (Rossi

et al., 2004, p.93). The Ethiopian government implemented the 2009 CPD framework based on the assumptions and expectation that it would improve the quality of education; improve teacher performance, and achieve higher student achievement scores (MOE 2005; MOE 2008). The study, therefore, focuses on identifying key performance indicators and seeking evidence of validity and effectiveness of the program in achieving the intended outcomes. Furthermore, it dwells on the CPD program evaluation processes through the lenses of the two-part program theory: Program Impact Theory and Process Theory (MOE 2005; MOE 2008; Rossi et al., 2004).

According to Rossi et al. (2004), program theory has two parts: Program process theory and program impact theory (p. 173). Program process theory describes what a particular program is intended to accomplish, so it presents “a plan or blueprint for what the program is expected to do and how” (173) it will enact it. While a program impact theory “describes a cause-and-effect sequence” (p. 141) of events that demonstrate a dependency of one, which instigates (cause) and of that which reacts (effect). Rossi and his team (2004) explain the relevance of program theory as an evaluation tool as follow:

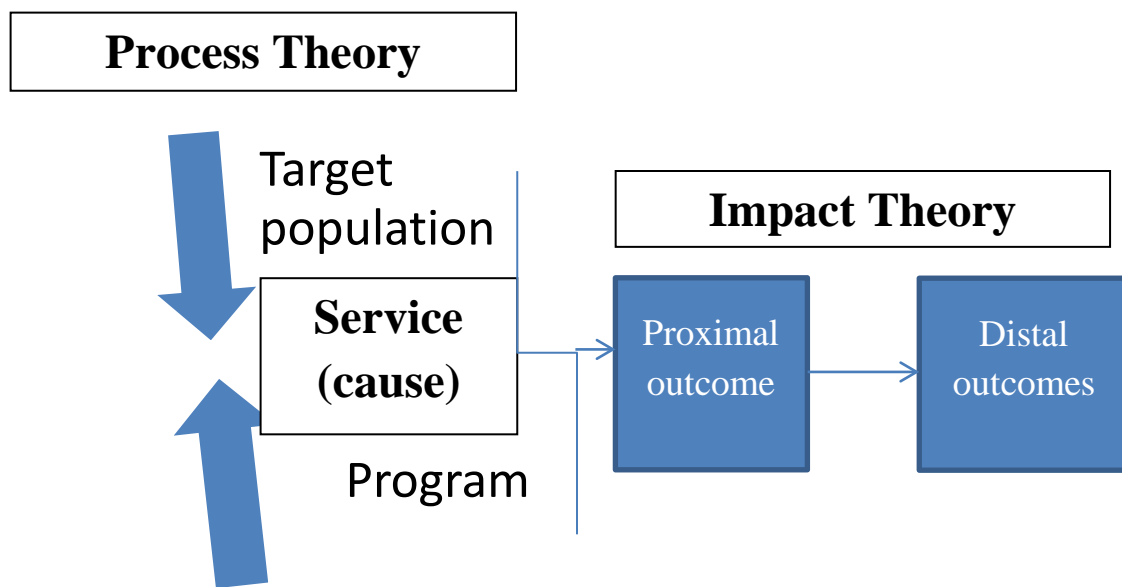
Program theory builds on needs assessment and thus connects the program design with the social conditions the program is intended to ameliorate. And, of course, the process through which theory is derived and adopted usually involves input from the major stakeholders and, ultimately, their endorsement. Program theory thus had a certain authority in delineating what a program “should” be doing and, correspondingly, what constitutes adequate performance. (p. 173)

Program Impact Theory

Rossi et al., (2004) explains that the program impact theory “consists of assumptions about the change process actuated by the program and the improved conditions that are expected

to result” (p.139). They add that the program impact theory explains a "causal theory" (p. 141). It describes a "cause and effect" relationship in which "certain program activities are the instigating causes and certain social benefits are the effects they eventually produce" (Rossi et al., 2004, p. 141, Chen, 1990; Lipsey, 1993; Marin and Kettner, 1996). The assumption here is that programs rarely have full direct control over the social outcomes, rather they “generally work indirectly by changing some critical but manageable aspect of the situation, which in turn, is expected to lead to more far-reaching improvement” (p.141).

Figure 11: Illustrating of Program Theory.

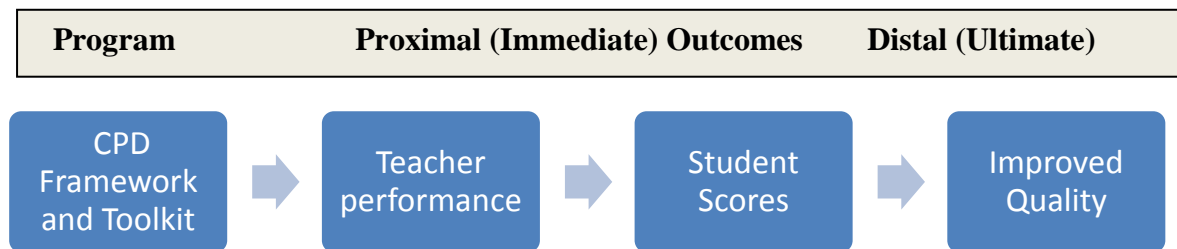


Source: Exhibit 5-C. Overview of Program Theory. Evaluation: A systematic approach. Seventh Edition. Rossi et al., 2004. Thousand Oaks: SAGE Publication

According to this program impact theory, any of the elements can become the cause or the effect of the other. As a result, the event’s causes direct influences on the proximal or immediate outcome. The proximal outcome then initiates the cause to the subsequent outcomes further down the sequence (also referred to as the distal or ultimate outcome). This approach

shows the dependency of the distal outcome on the effect of the proximal outcome. So, in effect, if the program, the CPD framework (the cause), had a moderate impact on teacher performance (the immediate outcome), then the program's ripple effect will not be impactful enough to affect the quality of education, which is the ultimate, desired end-result.

Figure 12: Illustrating program impact theory.



Nevertheless, assessment of program theory “requires a judgment call” (p.153) that is based on the results of needs assessments and societal condition (Rossi et al., 2004). Its validity is “strengthened if those judgments are made collaboratively with relevant experts and stakeholders” to build evidence-based systematic program (Rossi et al., 2004, p. 153). Likewise, Hattie et al., (2016) suggest creating a collaborative impact-team to facilitate a system-wide change. Fullan, also, concurs by pointing out that sound decision-making strategies require the support of the whole system (Fullan, 2011).

On the flip side, if the program's impact is ambiguous or if there is a lack of the specification of the program's intended outcomes, then the evaluation process has limited ability to intervene. This limitation cannot help evaluators distinguish between what was successful or a failure. Nor can it decipher if it program was responsible for producing the intended outcome or not. For this reason, evaluators should assess the program's impact; they must clearly and

explicitly describe the program's intended goals and objective as well as specify the efficiency of the expected outcomes (Rossi et al., 2004).

Program Process Theory

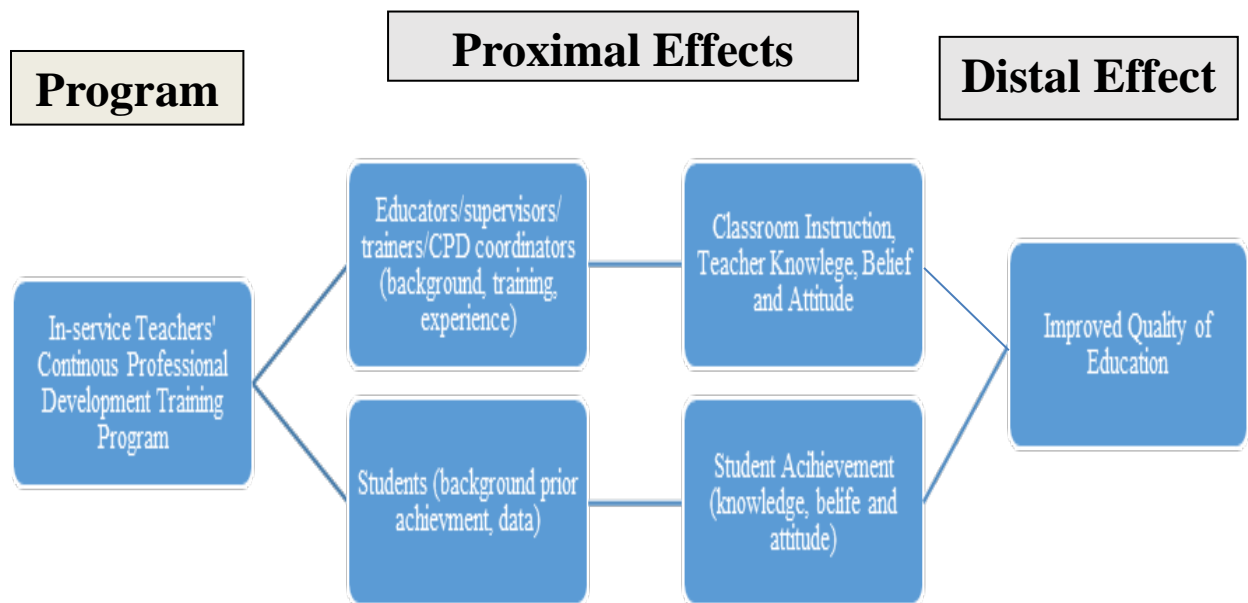
The principles of process theory provide an alternative approach to evaluating a program based on identifying "aspects of program performance that are most important," and providing "some indication of what level of performance is intended" (Rossi et al., 2004, p, 173). Scheirer (1994) explains that the process of evaluation "verifies" the performance of a program, which is the program process monitoring step. If the program operates as intended, it produces the expected outcome to the "intended recipients," which is part of the outcome monitoring step. However, this evaluation approach does not assess the effectiveness of the program; instead, it addresses if the program reached the "intended target population" (p.171) and if the program adhered to the initial plan, or set a standard.

Rossi et al., (2004) state the process theory builds on "aspects of program performance that are most important to describe and also provides some indication of what level of performance is intended, thereby providing the basis for assessing whether actual performance measures up" (p.173). This approach factors in procedural implementations in step by step process. In other words, the process evaluation approach makes it conducive to determine if a procedural step was skipped, missed, or not performed; it helps pinpoint the level of performance at each stage, and assess if the program reached the intended recipients. In which case, this approach can assist in determining organizational components or parts of a whole system to implement a continuous program evaluation and monitoring process. As a result, process evaluation can serve as feedback system on whether the program operates as intended and if it produces the expected outcome for the target population.

Program Theory (Impact Theory and Process Theory)

The illustration below (Figure 13) depicts the program-process in conjunction with program impact evaluation approach to determine if the CPD program complements the impact it is expected to have. In this example, the evaluation identifies the program’s (cause) intended outcomes (proximal effect and distal effect) and specified the steps in the evaluation plan as indicators of the program’s performance level. This approach can help evaluators develop a well-developed CPD program monitoring and management system and tighten the gap between the program's expectation and achievement. It can also contribute to enforcing accountability, generate evidence (data), build a feedback system and facilitate a system-wide change (Rossi et al., 2004; Guskey, 2000; Guskey 2002; CCOSS 2008).

Figure 13: Illustrating organizations schematics for the CPD framework and toolkit (Based on program impact theory and process theory).



Other studies have identified that setting defined goals for the expected outcomes determines the effectiveness of a program. Setting clear goals determines the effectiveness of

program's management and implementation processes (Wiggins & Mctighe, 2005; Desimone, 2009; Guskey, 2000; Guskey 2002; Garet et al., 2001; NSDC, 2002; Killion, 2002; CCOSS 2008, Desimone, 2009). Furthermore, evidence-based evaluation of the program can help teachers identify their professional growth and draw teachers in at the early stages of the decision-making process, which increases their buy-in, ownership, and commitment to implement the CPD program in a purposeful and meaningful manner (Craig et al., 1998; Ginsburg, 2010). Consequently, this evaluation process links the program to individual teacher's strength and weakness. It also helps promote:

- professional and performance growth for teachers,
- addresses questions of relevance, efficiency and effectiveness, and
- incorporates an instant feedback system (Dohj and Verspoor, 2013; Loucks-Horsely et al., 2010; Webb (2008); CCOSS, 2008; Wayne et al. 2008; OECD, 2013; Desimone, 2009; Desimone et al., 2002; Guskey ,2000 and Guskey; 2002).

Comparative Study

What is not working? The Teach English for Life Learning (TELL) workshop and training program for in-service teachers serve as an example of discrepant accounts of different stakeholders (USAID-AIR, 2012; Leu & Ginsburg, 2011). The Ethiopian Ministry of Education and Regional Education Bureaus (REBs) in partnership with the United States Agency for International Development (USAID) and the American Institutes for Research (AIR) including other international organizations provided the TELL training program. This program reached 52,300 grade one to four teachers and 20,000 grade six to eight teachers over a three-year period “through a cascading model” (USAID-AIR, 2012, p 2). During 2008 and 2009, the program

distributed 144,614 training materials and trained 22 master trainer; 289, teacher trainers; 19,146 grade six, seven, and eight teachers; trained 59 observation skill and on methods of collecting data.

After collecting 301 samples from grade six to eight students and analyzed the data, the experts concluded that the program had 90% success rate in implementing the TELL program. Subsequent analyses from 2009 to 2010 (grade one and two teachers) and 2010 to 2011 (Grade three and four teachers) also showed 89.9% and 85.4% effective rates of success in implementing the TELL program, respectively (USAID-AIR, 2012).

However, the feedback received from the TELL participants gave an entirely different outlook. The trainees stated that the workshop days were “too short to adequately cover the content of the training (p. 16) and, since they did not re-enforce the training program, it lacked continuity “to maximize and sustain skills and knowledge gained” during the training (USAID-AIR, 2012, p.16). When confronted with these claims, the United States Agency for International Development (2012) field experts admitted that the program requires “additional time and refresher training activities” (p.16) for the implementation process to take effect and impact teacher performance. Furthermore, they pointed to the lack of capacity and commitment at multiple levels (USAID-AIR, 2012, p. 17). Professional development participants in Burkina Faso, Ghana, Nigeria, Senegal, South Africa, Uganda, Tanzania, and Zimbabwe reported similar outcomes (Ottevanger, Van-Den-Akker, De Feiter, 2007).

The 2015-report to UNESCO’ Education Sector, on the working conditions of the teaching profession, Ethiopia claimed that “the salaries of teachers of primary and secondary levels are two tiers above the other government employees” and that the government provides a financial incentive (UNESCO Education Sector, 2015, p.79). The attrition rates of teachers,

nevertheless, question the basis of this claim (Getahun, Tefera, Burichew, 2016; Gedefaw 2012; Tulu, 2013; Tuli and Tynjala 2013; UNESCO Education Sector, 2015). As a result, Tuli and Tynjala (2013) state “the teaching profession is often considered as a kind of bridge occupation in which young people stay until they find a better job” (p.12). They urge the government to “shift away from the traditional, top-down and non-collaborative nature of decision-making” and “strengthening the research-based approach to teacher development projects” to empower teachers (Tuli and Tynjala, 2013, p. 14).

In another example, the Ethiopian government embraced school-based, decentralized, cluster-based training model based on the success stories from other low-income countries (Yuchi et al., 2015). On the flip side, Hailu and Jabessa (2010) revealed that the framework lacked capacity at multiple levels - the school culture, teachers’ belief and practice, and student learning habits- due to the interdependency (Hailu and Jabessa, 2010; Mckenzie and Turbill, 1999). In the Oromiya region of Ethiopia, findings reflected a “misunderstanding” between CPD program developers and trainees with regards to the intended “concept” and “scope” of the training program (Hailu and Jabessa, 2010, p.74). Gemedda and Tynjala’s (2015) study also highlighted the one shot, short-sighted CPD training in Ethiopia in combination with the “bureaucratic and hierarchical imposition...left no room for participation, reflection, and collaboration” (Tuli and Tynjala, 2013, p.13; Gemedda and Tynjala, 2015).

Although some teachers in Jimma region of Ethiopia reported a positive outcome from the training, most responded that the CPD toolkit is length, frustrating, burdensome and too ambitious (Desta et al., 2013). Others in the Amhara region complained that the lack of support, follow up and relevance created a gap between theoretical and practical ends of the CPD framework (Wondem, 2015). Teachers within the Addis Ababa administrative-city reported that

they would leave the profession given the option due to the low pay and the lack of career-structure incentives. Seungcheon, H. & SungSang (2014) urge governments to take notes of the diminishing levels of teacher motivation and incentives.

A study conducted in the region of Harrari in Ethiopia presented mixed outcomes: about half of the surveyed teachers reported satisfactory outcomes, while the other half indicated that the “cluster” center coordinators and the regional experts were not supportive. Interestingly though, ninety-eight percent of the surveyed participants reported that they did not implement the CPD training into their teaching practices (Kassa et al., 2015, p.56-59). Seyoum (2013) adds that the intentions of the CPD framework do not reflect the practical realities in the classrooms due to top-down, donor-driven, short-lived incentives. Hence, Kassa and his team (2015) concluded that the CPD framework was ineffectiveness and recommended that the Ministry of Education “reconsider the structural issues” of the program (Kassa et al., 2015, p. 60). Specifically, they raised fundamental concerns about the evaluation and monitoring systems and insisted that the Ministry reconsider incorporating evidence-based and data- driven training programs (Kassa et al., p.60).

Dohj and Verspoor (2013) describe the Ethiopian pedagogical teaching practice as “teacher-centered, where didactic instruction (was) the norm” and lacking “evidence of active learning, inquiry processes, metacognitive skill development, or opportunities for creativity” (p. xx). The case studies involving teacher training institution also paint a dim picture when it comes to professional development programs. A study conducted at Adama University attributes the high number of failures to poor planning and execution of the implementation process. For this reason, the team recommends that the GEQIP - the quality improvement plan - should be more

involved in addressing the gap between the planning and the implementation stages of the training program (StateUniversity.com, n.d.).

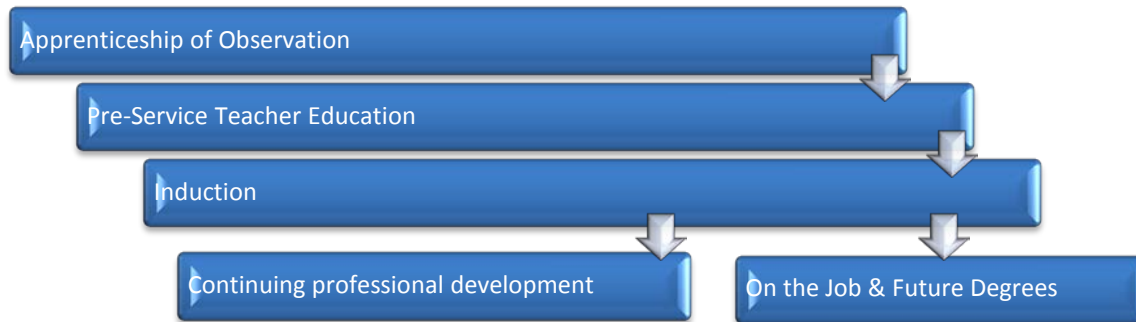
Smith (1975) additionally attributes the lack of teacher involvement (leverage) to the design of traditional teacher training programs as one of the reasons why teachers lack ownership. He argues that the training programs emphasize more on “the kinds of behaviors teachers should exhibit rather than on the rationale of alternative” (p. 184) expression that they may want to exhibit. Smith (1975) explained that teachers are “trained not to think” (p. 184). Instead, teachers “are bombarded with ‘facts’ or ‘prescriptions’ to “digest” (p.184), and, as a result, teachers become less innovative to try out new ideas when faced with stale situations (Smith, 1975).

What is working? Developing countries like Bangladesh, Botswana, Colombia, Guatemala, Malawi, Namibia, and Pakistan introduced long-term continuous professional development training programs at multiple stages. The CPD training programs served as a stop-gap solution for the shortcoming of the pre-service training to heighten the level of quality of teachers’ performance (Baessa et al., 1996; Craig et al., 1998; Ginsburg, 2009; UNICEF, 2000; MOE 2009; Plessis & Muzaffar, 2010). In all these cases, the training was rooted in school-based programs that involved follow-up strategies and mentoring support. Moreover, the program’s increased involvement of teachers motivated them and increased their collaboration and participation (Craig et al., 1998).

A common challenge amongst African countries is training teachers to move away from traditional teacher-centered-pedagogy focused teacher training programs to alternative, collaborative, community-based practices that embraced “concept of social cognition for teacher learning practices” (Plessis & Muzaffar, 2010, p. 25). According to Plessis & Muzaffar (2010),

one model that effectively promotes lifelong learning in some regions in Africa is the ‘Learn To Teach’ framework shown in Figure 14 (Plessis & Muzaffar, 2010).

Figure 14: Phase of the “Learning to Teach” Framework.



Note: Source Figure 3.1 Phases of LTT. Professional Learning Communities in the Teachers’ College. Plessis & Muzaffar, 2010. Washington DC: USAID/).

In Namibia, for example, the ‘Learn To Teach’ framework significantly transformed the education system. It created a guideline for careful selection of candidates entering the teaching profession; effective induction interventions for a new teacher; continuum professional development training or an alternative career-oriented professional growth opportunity (Plessis & Muzaffar, 2010). Malawi also experienced effective outcomes from a program that initiated teachers to become the designers of their professional growth. Furthermore, the training program (active-learning) was modified by teachers to develop their school-based training activities to “supplement the larger training programs” (Ginsburg, 2009, p.17). The program also solicited retired teachers as ‘mobile’ training ‘troupes’ to visit different schools and provide long-term support system throughout the region (Ginsburg, 2009, p. 17).

A reform movement known as *Nueva Escuela* transformed the education system in Colombia and Guatemala by incorporated a training program for teachers to help lower student dropout rates, improved attendance and graduation rates (Chesterfield and Bubio, 1997). A comparison study between traditional and *Nueva Escuela Unitaria* (NEU) schools in Guatemala

highlighted improved “efficiency and quality of schools in the rural areas” as a result of the infusion of NEU trained teachers (Baessa et al., 1996, p. 84). The primary factor that contributed to the success of NEU schools in Colombia and Guatemala has increased teacher participation. The NEU trained teachers gained confidence; attendance rates improved and parents reported that their children’s, as a result, were able to “read better and behave better” (Baessa et al., 1996, p. 84). In contrast to top-down programs, this reform begins with teachers, and it empowered them to take part in the movement without much resistance (Craig et al., 1998, p.87). Schools implemented a bottom-up approach that engaged teachers to participate in changing the school environment actively. Furthermore, teachers collaboratively created “action-oriented” guidelines to train additional teachers around the region (Craig et al., 1998, p 84 – 88).

Equally impressive is the Balochistan Primary Education Development Program (BPED) in the Pakistan, also called the Primary Education Development (PED) project. This program initiated a training program designed for the female population in an area where over 60 percent of teachers did not receive adequate training. This project utilized long-distance training strategies to overcome cultural bias, which forbids women from attending schools. The female trainees produced training manuals that are sensitive and relevant to local customs and traditional practices. This program attracted more female teachers in the community (Craig et al., 1998).

What are the lessons learned?

Motivation and leverage. Given these points, there is no doubt that teachers’ involvement empowers and motivates teachers. Their participation in the decision-making process thus enhances the success rate of any professional development program (Craig, Kraft, and Du Plessis, 1998; Ginsburg, 2010; Afghan et al., 1997). On similar account, UNESCO’s current

professional development strategy shifted to embrace teacher motivation and support (UNESCO, 2012; UNESCO, 2016).

An equally important factor that enhances the success rate of the CPD program is to increase teacher leverage (Craig, Kraft, and Du Plessis, 1998; Ginsburg, 2010). Studies reveal that teachers feel empowered when they participate in the planning and designing stages of the evaluation processes (Craig, Kraft, and Du Plessis, 1998; Ginsburg, 2010). Involving teachers at the early stages of the decision- making process also increases their buy-in, ownership, and commitment to implement the CPD program in a purposeful and meaningful manner (Craig et al., 1998; Ginsburg, 2010). Thereupon, increased commitment from educators improves the chance to implement more relevant and appropriate programs (Craig et al., 1998; Ginsburg, 2010).

Support. Darling-Hammond and her team (2009) point out thirty to one-hundred hours of training over a six months period to one-year has improved chance to impact a teacher's performance. Furthermore, professional development "delivered in conducive settings by those who designed" the program has a considerably higher "impact on student achievement" (Wayne et al., 2008, p. 469). However, this process requires adequate support from the leadership throughout the stages involved in the training process (Craig et al., 1998). Self-reflection as well as collaborative peer-coaching, brainstorming and problem-solving opportunities, based on the individual needs, produces an effective environment for teachers to grow as professionals (Craig et al., 1998).

Studies conducted by the Ministry of Education indicated that about 70 percent of teachers have plans to leave or would leave the teaching profession if they get another job offer (Getahun et al., 2016; MoE 2015). To this effect, Dohj and Versspoor (2013) noted that

implementing “a framework for teacher management” (p. xx) and inducing a support system for teachers at the regional and *woreda* (village) levels promotes effective leadership. Furthermore, building capacity and allocating resources improves working conditions that increase teacher leverage, motivation and organizational commitment (Getahun et al., 2016; Dohj & Vespoor, 2013, p. xx).

Complement need. Megahed and Ginsburg (2008) of the American Institute for Research (USAID-AIR) added that the CPD training program has to be “complementary” (p.4) to teachers’ experiences. It must identify the needs of the stakeholders and “model the capacities” of teachers (McDiarmid and Clevenger-Bright, 2008, p, 4; Leu and Ginsburg, 2011). Drinan (2015) confirms that effective training programs have moved away from centrally controlled model to “more reflective model where professional development needs are identified by teachers and for teachers” (p.37). The programs must equally become more in tune with the local, cultural outlooks and reflect diverse needs (Drinan, 2015). Teacher training programs must initiate motivation for enhanced performance and career growth and provide a consistent, support system to produce effective outcomes (USAID-AIR, 2012). Organization for Economic Co-operation and Development, OECD, (2013) also recommends that professional development program opportunities should be tailored to “individual teachers’ strength and weaknesses” to produce more effective outcomes (OECD, 2013, p.69).

The list below (Table 4) attempts to unpack the general attributes for some of the CPD training programs in the context of the school culture. However, decision makers need to acknowledge that selecting effective training programs to support complex circumstances is quite an endeavor. In all, Guskey (2000; 2002) explains that evaluating the effectiveness of a professional development program is determined by setting clear goals for the outcomes. On this

note, Desimone (2009) stated that “results” or “processes” that enriches teacher performance is the basis for evaluating programs (Desimone, 2009, p.28).

Table 4

CPD Systems – Support Systems for Teachers’ Continuing Professional Development

CPD Systems	Attributes	Location	School culture
School – based	<ul style="list-style-type: none"> • Teacher involvement and engagement • Intrinsic and extrinsic incentives • Individual and organizational 	Guinea, West Africa	<ul style="list-style-type: none"> -Urban & Rural -Open and supportive -Collaborative: peer-led
Cluster-based	<ul style="list-style-type: none"> • Decentralization • Cost-effective - Suited for areas with limited resources • Build capacity – support organizational • Easy to set up and organize • Transferable and adaptable to different context 	Uganda Ethiopia	<ul style="list-style-type: none"> -Urban & Rural -Sharing of resources -Ideal for implementing Instructional and governmental led reform or change
Teacher Resource Centers	<ul style="list-style-type: none"> • Multifunctional • Provide opportunity to provide networks • Link teachers to professional development training to school base 	Namibia Bangladesh Swaziland Zambia Kenya Ecuador Sri Lanka	-Global
School networks	<ul style="list-style-type: none"> • Cover a larger area • Ideal for implementing Instructional and governmental led reform or change 	Australia	Urban & Rural
Teacher Network	<ul style="list-style-type: none"> • Ideal for remote area • Most organic support system – learning from peers • Serves as ‘communities of practice’ or ‘as ‘learning circles’ • Individual and organizational 	Japan Singapore Finland	Urban & Rural
Partnership systems	<ul style="list-style-type: none"> • School- University partnerships • School – Business partnerships 	Brazil Aga Khan University	Urban
Distance Education/Learning System	<ul style="list-style-type: none"> • Use of different media • Use of Information and Communication Technology (ICT) • Use of the internet, open source online sources • Use of blended approach • Individual and organizational 	Kenya India Australia	Urban and Rural

Source: CPD Systems. Drinan, H. (2015) An overall Review of Support for Rural Teachers Continuing Professional Development. Edited by Yuchi, Z., Jing, J. & Endris, A. *Developing Support Systems for Rural Teachers’ Continuing Professional Development*. New Delhi: SAGE Publication Pvt Ltd.

Defining Quality

Performance. In recent years, the quality of education is strongly tied to the context of teachers' performance more so than the pupil to teacher ratio, curricular content, or school infrastructure (UNICEF, 1990; Sanders & Revirts, 1996; Wright, Horn, & Sanders, 1997; Jordan, Mendro, & Weerasinghe, 1997). According to the National Institute of Education of Singapore (2010), a teacher's performance is not only based on his/her competency (ability) of knowledge, skills, and behavior. Teacher performance is broadly classified into three performance dimensions: professional practice (the dedication to grow and improve one's practice); leadership and management (the opportunity taken to collaborate with others to provide quality learning for students), and personal effectiveness (the high standards set for oneself and one's abilities to carry out duties and responsibilities).

When it comes to measuring teachers' performance based on students' academic performance, there is no simple answer. Multiple studies support the link between student experiences in the classroom to their academic performance, while others point to circumstances outside the classroom. Wenglinsky (2002) study finds teacher classroom practices affect student performance. The study investigated three aspects of teaching quality: classroom practice, professional development training, and teacher's education using cross-sectional data (p.7). Based on a greater expectation from classroom practice of teachers, the first hypothesis assumes a greater impact on student's performance. Next, this hypothesis holds that the impact from professional development training produces an impact on student's outcome. On the other hand, the second hypothesis raises a higher expectation of student performance based on teacher education. The base for these assumptions is that "student learning is the product of the interaction between students and teachers, and both contributed to this interaction" (Wenglinsky,

2002, p.7). However, findings supported the initial hypothesis that classroom practice and professional development training have stronger influences on students' performance than teacher education (Wenglinsky, 2002).

Darling-Hammond (2000) research examines teacher qualification impacts students' performance using multiple state data sources. In her final analysis, she suggests "teacher quality variables appear to be more strongly related to student achievement" (p.32). She adds the one predictor of 'quality' of teachers is "full certification" in a major field; it is a "more powerful predictor of student achievement than teacher's education levels (e.g., master's degree)" (p.32). The implication for decision-makers suggests that the "teacher qualification process should emphasize on setting standards, accreditation of teacher education institutions" (p.32). Darling Hammond (2000) goes on to explain that policy-makers should consider "teacher licensing systems and more effective professional development strategies" produce "evidence of the stronger effect on teaching and learning of approaches that strength teachers' ability to teach diverse learners" (p.32).

The evidence offered by the case studies in this literature review suggests that the CPD programs do not provide teachers with the appropriate training to become competent unless the professional development training followed a more purposeful and strategic design. The rhetoric, theoretical implications documented in the CPD framework and toolkit manuals ignores the evidence from the practical realities of the classrooms. Under these circumstances, there is an urgent need for the Ethiopian Ministry of Education to restructure the CPD framework and integrate evidence-based professional development opportunities to transform teachers' performance.

Accountability and leverage. Lewis (2009) points out that the top-down-policy-making process in education is not consistent with the realities of ones directly impacted by the action. Unlike the medical and legal professionals, educators do not have as much leverage to exercise their expertise to resolve issues and concerns that they have specifically identified at the job. Consequently, this generalized-one-size-fits-all approach is challenging to those continuously seeking progressive alternatives. Lewis referred to the top-down traditionalists as “Hold-to-It-Hawks.” These groups of thinkers rely on a “test based” centralized system. The test scores, the “Hawks” believe, measures students’ performances that are dependent on teachers’ performances; hence, they narrowly focus on the teachers’ performance evaluation processes to improve students test scores. Consequently, the absence of the opportunities to modify performance stifles the education system.

Although opponents agree that teacher performance contributes largely to students’ test scores, they argue that accountability in a test-based system makes generalized assumptions and suggests non-specific solutions leading to a cycle of long drawn ineffective outcomes. Lewis refers to these alternative thinkers as the “Broader, Boulder Bunch.” The “Broader, Boulder Bunch” favor “periodic school inspections” and “school-based... evaluation” processes combined with national testing programs to assess student performances. The “Bunch” considers research-based evidence to reveal the necessary skills development analysis results. Similarly, the task for Ethiopia’s policy-makers is to move away from a myopic view of accountability by only considering the NLA (test-based) measures and adopt a research-based, holistic approach.

Motivation and Leverage. However, there is “considerable evidence that teacher motivation may be the most critical element of effective teacher performance” more so than competent career-long, school-based training programs (UNESCO Education Sector, 2013; Dohj and Verspoor, 2013, P xx). It suggests that incorporating teachers’ involvement in the early stages of the program development process initiates interest and motivation, which are the most important ingredients in achieving quality improvement. Theorists Ryan and Deci (2000) conceptualize motivation as being “moved” (p. 54) to do something and committing to it. There are two types: intrinsic motivation and extrinsic motivation. Intrinsic motivation triggers autonomy (freedom of making your choices, leveraging), competence (being able to complete a task, can be improved with training) and relatedness (feeling of belongingness). Extrinsic motivation, based on reward or recognition, has separate consequences (Ryan and Deci, 2000, p.65).

In the context of education, Ryan and Deci (2000) explain that both intrinsic and extrinsic motivations are key ingredients to raising interest and commitment to new skills. They state:

Social contextual conditions that support one’s feeling of competence, autonomy, and relatedness are the basis for one maintaining intrinsic motivation and becoming more self-determined with respect to extrinsic motivation. We point out that in schools, the facilitation of more self-determined learning requires classroom conditions that allow satisfaction of these three basic human needs- that is that support the innate needs to feel connected, effective, and agentic as one is exposed to new ideas and exercises new skills. (Ryan and Deci, 2000, p.65)

On this note, UNESCO’s Education Sector organized the 9th international policy dialogue focused on teachers’ motivation and working conditions in December of 2016 (UNESCO/ED,

2016). According to UNESCO's Institutes for Statistics (2016), there is a global need for 69 million new teachers (24 million for primary and 44 million for secondary education) by 2030. It raises concerns about the high attrition rates, and the forum plans to establish action plans to remediate the dire circumstance by addressing four main issues: teacher training; working conditions; governance, and recruitment. While these initiatives raise legitimate concerns, policymakers and decision-makers should reframe the problems in the context of Ethiopia. Reframing of the CPD training program helps meet its unique circumstances rather than leading it to fall into the same trap of more 'one-size-fits-all policies, donor-driven programs, and short-lived, ad-hoc project initiatives that have resulted in more failures than successes.

Technology Driven CPD Training.

This literature review highlights the need for re-designing Ethiopia's current CPD framework. As part of the redesign, it proposes the applications of mobile technology, an application-based CPD toolkit to inspire and involve teachers to participate in customizing the program according to individual's strength and weakness. This application-based CPD program is expected to promote individual performance and professional growth; address concerns and questions unique to need, and provide evidence (data) to aid the program evaluation process. Fadel (2010) best explains the relationship between education, technology, and innovation; he states innovation plays a "supportive rather than disruptive role(s)" (p.1) in education. This relationship represented a "symbiotic" dependency, where technology and education have changed "alongside one another" (Fadel, 2010, p.1). He adds that examples like "High Tech High" that integrated "personalized learning" and "adult world connection" "to (effectively) integrate the use of technology in teaching and learning" (p. 8) demonstrate how innovative technology successfully helped fill in the gaps in developing skills. Furthermore, mobile

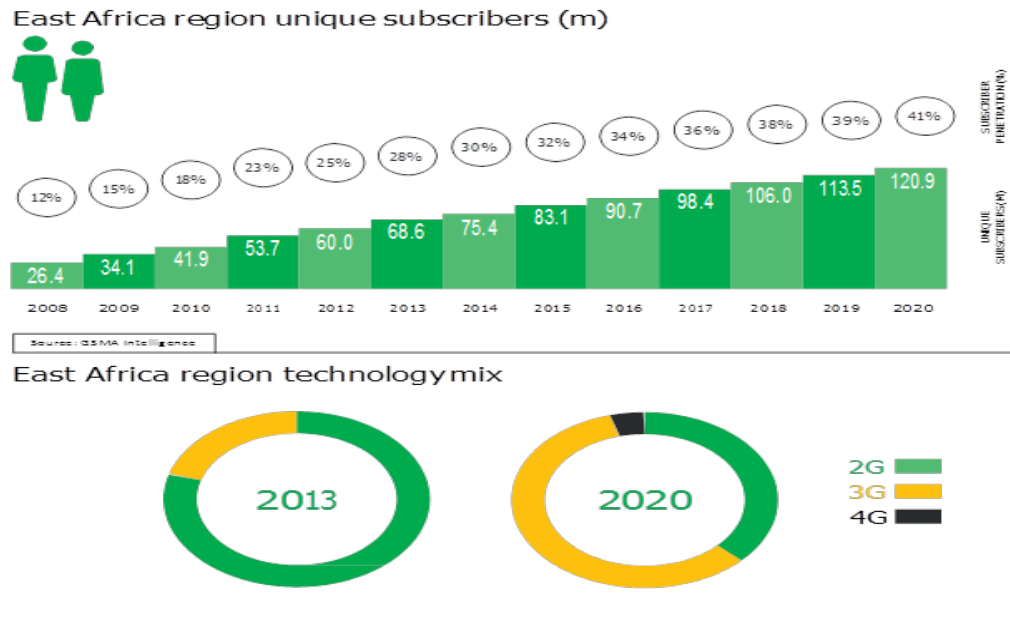
technology complemented users of differing abilities to match the different stages of development at their pace (UNESCO, 2013b).

Accessibility. Technology has undoubtedly led to the explosion of mobile device usage (UNESCO, 2013b). The UNESCO 2013 report highlights the fact that two-thirds of the world's Internet users were in developing regions and that the number of Internet users doubled between 2009 and 2014, at a growth rate of about 8.7 percent compared to 3.3 percent in developed countries. In Africa alone, online usage increases by 20 percent between 2010 and 2014, with 30 percent of the users being between the ages of fifteen and twenty-four (UNESCO, 2013b). In this case, technological explosion holds the promise that mobile devices may serve a flexible learning environment that is suitable to meet the needs and trends of the developing world today (UNESCO, 2013b).

This explosion in use/ownership has revolutionized mobile learning to bring schooling to marginalized students by creating strategic opportunities to expand access to education. UNITWIN/UNESCO (2014) an international inter-university cooperation and network serves as a medium to reach the unreachable. Programs like BridgeIT, a global mobile learning initiative, reach learners in and out of school using mobile phones (UNITWIN/UNESCO, 2014). BBC Janala in Bangladeshi provided a program to improve English language skills using low-cost mobile subscriptions (BBC, 2014). Nokia Mobile Mathematics (MoMath) project in South Africa provided Grades 10-12 Math lessons (UNESCO, 2013b). Another project called Text2Teach (T2T) substituted textbooks to serve half a million students and trained over 1,500 teachers (UNESCO, 2013b). Studies show that countries like India, Bangladeshi, and South Africa have applied low-end mobile phones and radio to circumvent challenges with accessibility and sustainable connectivity (UNESCO, 2013b). India's Barefoot College trained women in

healthcare, water sampling and testing, solar engineering and social services to better equip women and helped them find work (UNESCO, 2013b). In Kenya, a software coding community called AkiraChix (2011) increased the number of female software developers using mobile technology (UNESCO, 2013b).

Figure 15: The mobile economy 2014 (East Africa region).



Source: SSA.GSMAMobileeconomy.com

GSMA, a private telecom company, points out that there are over 3.2 billion mobile users/owners in the world (GSMA, 2014). They added that the numbers of mobile users/owners are quite remarkable when contrasted with the fact that only 4.5 billion in the world have access to toilets today (GSMA, 2014). Two out of three people in the developed world and two out of five people in the developing countries own a mobile phone (GSMA, 2014). GSMA (2014) expects the number of mobile phone user/owners to reach half of the population in the developing world by 2017. Furthermore, as shown in Figure 15, the explosion of smart technology (3G) is expected to become widespread in the eastern region of Africa by 2020. Fadel using examples like “Careers Wales” explains that technology provides instant feedback

through built-in “e-portfolio” to aid with self-assessments and monitor performance (Fadel, 2010, p. 8). In a different study, Nokia’s Data Gathering Project (2012), suggests that data collection offers mobile users real-time analysis to evaluate progress throughout the learning progression. Hence, mobile devices play a significant role in providing automatic feedback, and it allows the capability to continuously gear up performance levels (NOKIA 2012; Cisco Systems, 2010).

Affordability. The 10th edition of Education for All Global Monitoring Report documented that funding for education declined in 2011 for the first time since 1997 and the report warned that funding to likely stall progress past 2015. Advocates for distance learning (UNESCO, 2010) point out that mobile/distance learning schools, none the less, provide a cost-effective alternative to traditional, formal school design. Supporters added that mobile learning provides affordability and functionality; it extends the reach to larger segments of the population that otherwise would not have access to education (UNESCO, 2010). Nokia Data Gathering Project (2012) also reported on trends that lowered costs of mobile devices for users. The report indicated that mobile users in developing countries have cheaper, longer-lasting and faster-charging batteries available. The Economist (The Economist, 2011) also reported that researchers at the University of Illinois worked on a lithium ion battery that fully charged in two minutes.

Others are working on producing solar powered energy efficient mobile phones (Nokia, 2012). One emerging trend, ‘glocalization’ (bringing together local and global communities), influenced by technology brought communities from various countries to collaboratively share and explore common interests (Fadel, 2010, p. 4). He explained that “Rafi.ki,” served “over 1700 schools in more than 120 countries” (p. 4) as an educational network, where traditional

constraints no longer dictated where and when education took place (Fadel 2010).

“Glocalization” also redefined the funding model of education by forming new partnerships.

This “trend” shifted funding from the local public to the private sectors, as well as, to global corporations, non-profit organizations and pro-profit businesses (Fadel 2010, p. 4).

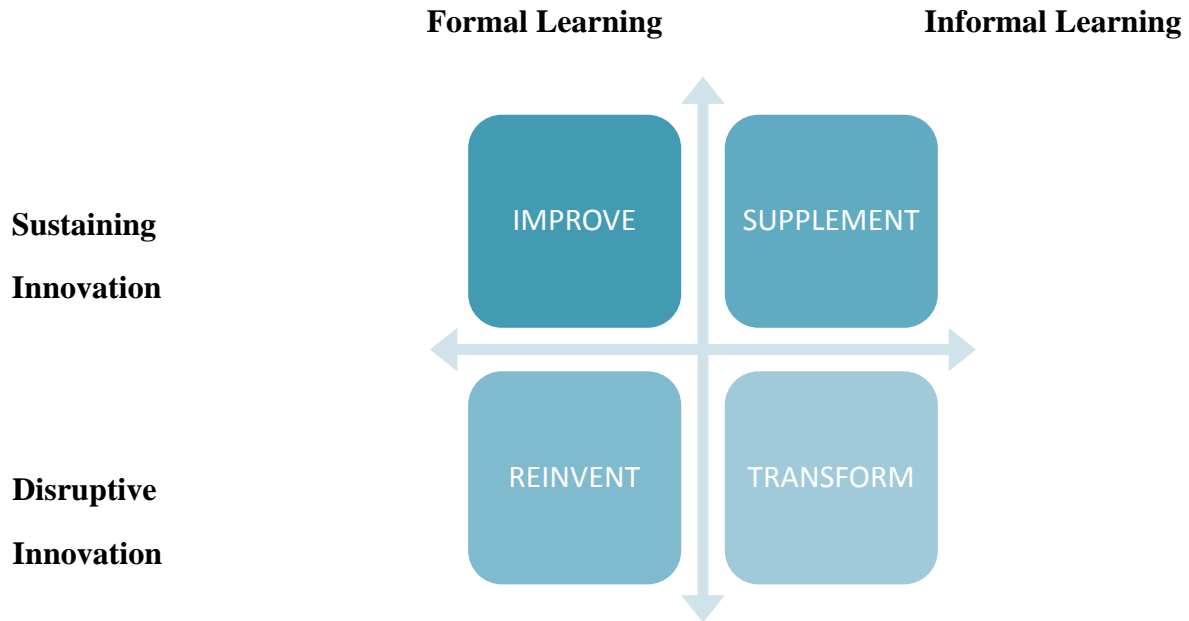
Conceptual Framework

Learning from the extremes. The goal for re-designing the CPD framework is to help tailor the program to meet teachers’ specific needs. This study explores Leadbeater and Wong (2010) “Learning from the Extremes” model to meet the emerging requirements of the Ethiopian teaching population living in extreme situations. The model has a four-quadrant framework that represents four possible educational outcomes (as illustrated in Figure 16): Improving formal learning; supplementing schools through informal learning; reinventing formal learning; or, transforming informal learning (Leadbeater and Wong 2010). Their study makes a couple of recommendations to either: sustaining innovation through improvements made to formal education, and supplementing formal education with informal education, or introduce ‘disruptive innovation’ by reinventing formal education, and by transforming informal education to present a new way of learning (Leadbeater and Wong 2010).

Disruptive innovation. Leadbeater and Wong (2010) states learning “through radical innovation” would help “examine the significant challenges facing education in the developed and developing world” (p.5, Leadbeater and Wong 2010). They add, ‘disruptive, innovative’ practices serve the developing countries by transforming informal education rather than reinvent formal education. The researchers claim that “extreme situation” –as witnessed in sub-Saharan African countries- “demand transformative educational practices with innovative learning approach to supplement formal learning to help sub-Saharan African countries pull themselves out

of poverty” (p.5, Leadbeater, and Wong, p4 2010; UNESCO, 2015). Leadbeater and Wong explain that transformative informal learning creates “alternatives to school” and promote “low-cost, mass, participatory models of learning” to meet the educational needs of the developing world (p. IV, Leadbeater, and Wong, 2010).

Figure 16: Educational innovation grid.



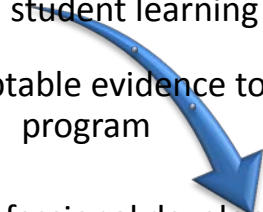
Source: Adopted from Cisco System, Inc. by Charles Leadbeater and Annika Wong. *Learning from the extreme* (2010) p 3.

Institutes like the Barefoot College in India: a ‘self-help’ educational model, exemplifies innovative, transformational solution to education (Leadbeater and Wong, 2010). Hole in the Wall, another example of an alternative learning solution, provided computers to children with no prior experience. These computers were set up without any training to children in 500 locations around India. Consequently, the children surprisingly motivated themselves to learn how to operate and use the computers.

Backward design. Wiggins & McTighe (2005) introduces backward design as a framework to help prioritize needs during the designing and planning processes. This design

process contributes to identifying the expected outcome and out to go about to get this result. As shown illustrated in Figure 17, the starting point (step one) stems from identifying the desired student learning objective by asking what should students accomplish, and step two determines the evidence of how the CPD program achieves this goal. The key question thus becomes: how does the CPD program find evidence to base the evaluation process to determine if the desired objective was achieved or not. Step three then seeks a complementary, appropriate, and practical professional development program (i.e., activities, knowledge, skill, and training) best suited to accomplish the desired objective identified in step one of this process (Wiggins & McTighe, 2005; HFRP, 2006). This design framework enabled teachers, principals, supervisors to develop a program that best fits unique circumstances. For this reason, this framework may help serve the need to develop programs that are easier to evaluate.

Figure 17: Backward design.

1. Identify desired student learning outcome
 2. Determine acceptable evidence to evaluate the program
 3. Plan professional development learning experiences
- 

Source: Wiggins & McTighe 2005 Understanding by design PD. Understanding by Design Exchange Web site (<http://ubdexchange.org>).

Summary

The Ministry of Education set the CPD framework as a major part of the national intervention plan to significantly impact the quality of education in Ethiopia. Despite this effort, evidence pointed to the fact that the program fell short of reaching its objective. The program's primary goal was to improve the teaching and learning practices and increase human capital to

shift the country's economic status. However, this study identified a gap between the program's design and its practical application in real-life. The findings from the case studies reflected that the CPD framework lacked evidence-based evaluation process to validate the effectiveness of the framework and provide feedback to monitor its impact on teacher's performance.

As a result, this research discussed the need for redesigning the current CPD framework to transform and remediate scenarios that impose difficulties to sustain evidence-based program evaluation system. Redesigning the CPD framework would provide a feedback system to help teachers gauge their performance and promote their professional growth. Furthermore, the study proposed integrating technology to customize the CPD framework to help match the program to individual teacher's need. Technology would also provide a flexible delivery platform for teachers working in urban and rural regions of the country.

Chapter Three: Methodology

Purpose of the Study

This study highlighted the need to develop an evidence-based CPD program evaluation system to address questions about the program's impact on the quality of education, teacher performance, and student learning achievement. The literature review pointed to the fact that evidence-based evaluation system helps teachers gauge their performance and track progression by providing a continuous feedback cycle. Such a system presents teachers supporting evidence to better understanding their current status relative to the expected outcome.

Based on this understanding, teachers' background information, experiences, beliefs, and attitudes would cover a wider range of deficiencies. The information gathered in this step functions as a tool for decision-making purpose to monitor the program's validity and effectiveness in producing the intended outcomes. The evaluation process additionally serves as a guide for CPD program developers to correlate the training module accordingly and provides data for future impact analysis studies.

This research also explored a technology-based CPD design for teachers to allow customization of the training program to specific needs. A mobile phone application presents an alternative ground-up approach to involve teachers in their professional growth and development. The objective of integrating technology to the CPD program is to transform and remediate scenarios that impose difficulties to sustain a culture of continuous professional growth and development for teachers in Ethiopia. A technology-based design would provide access to a menu of choices for teachers working in urban and rural communities and facilitate a data-driven program evaluation system.

Research Questions.

The study investigated the impact of the CPD program on the teaching and learning practices through open-ended survey questions. The researcher first presented consent forms to the research participants at School X in Addis Ababa, Ethiopia. Then, the researcher presented the survey questionnaires to the school leadership, staff and faculty to gather information on their perspectives and experiences.

Following these steps, the researcher collected and analyzed the data to provide information that supported the program's accomplishments and challenges. Based on the findings, the researcher investigated the validity and effectiveness questions using Trochim's logic and PICOC model as part of the evidence-seeking strategy and utilized comparative analysis to gain a better understanding. The researcher additionally explored evidence of cause and effect relationships between the CPD training and teacher performance through the lenses of Process Theory and Program Impact Theory. To this effect, the researcher addressed the following research questions:

1. What were the key CPD efficiency and performance indicators of its accomplishments?
2. What were the outcomes of the validity and effectiveness evaluation of the CPD program based the attitudes, experiences, and perceptions (beliefs) of the research participants?

Setting and Subject.

The limited access to the 497,737 teacher population in Ethiopia presented sample size challenges for this research. To compensate for this drawback, the scope of the study focused on a school located in the capital city, Addis Ababa, Ethiopia (henceforth referred to as School X).

Research Design and Methodology

This study relied on survey questionnaires and case studies from Ethiopia and other countries with similar socioeconomic and culturally diverse societies. The conceptual frameworks included in this study anchor the logical and theoretical construct of data interpretation (Miles and Huberman, 1994; Baxter and Jack, 2008). Qualitative methodology embraces inductive and deductive interpretative approach to “let the data lead to the emergence of concepts,” as well as letting “the concept lead to the definition of the relevant data” (Yin, 2011, p 28). Hence, the study’s assumption lay within the interpretive paradigm, which suggests a qualitative approach to inquiry.

A qualitative approach also presents a flexible platform to meet the challenges with sample size in this study (Yin, 2011). This methodology helps overcome the challenges to quantify and analyze data due to the limitations imposed by the various interpretation of events people experience (Strauss & Corbin, 1998; Bogdan & Biklen, 2003; Denzin & Lincoln, 2000). A qualitative approach allows a better understanding of people perceptions that are unique to circumstances within their particular social context (Esterberg, 2002). Therefore, the study relied on this method to triangulate various data source and provide meaningful explanations to draw sound conclusions (Yin, 2003; Yin 2011).

Research analysis. The qualitative analysis helped establishes the basis to determine patterns and themes essential to predict the results of this study (Yin, 2003; Baxter and Jack, 2008). The researcher utilized exploratory and descriptive strategies to evaluate the CPD program and answer the "how" and "why" questions to "cover contextual conditions" in Ethiopia (Yin, 2003, p 547). This method enhanced data quality "on the principles of ideas convergence and confirmation of findings" (Baxter and Jack, 2008, p.556; Knafl and Breitmayer, 1989).

This research centered on exploring the benefits and deficits of the CPD framework and examines the program's achievement gaps. To this effect, the study sought to find the evidence to determine the program's impact on teachers' performance through survey questionnaires. The study used a variety of data source to provide explanations to the presumed causal relationship between training programs and its impact on performance in real-life scenarios (Yin, 2003).

Data collection strategy. This exploratory study primarily used qualitative data collected through questionnaires. The method of data analysis involved broad data categorization, interpretation and identification of patterns based on common or different themes, and evaluating the CPD program through the lenses of process theory and program impact theory to find evidence that supported the programs' accomplishments, validity, and effectiveness to enhancing teacher's performance in Ethiopia. These steps included the following:

- The research communicated the purpose of the study to all participants; informed each of their rights not to take part in the research, and provide a consent form.
- Participants first completed the consent forms.
- The researcher valued and respected the anonymity of the participants.
- The researcher distributed survey questionnaire, and
- Conducted impact analysis study.

Procedure. The researcher collected completed consent forms from participants at school X.

- Distributed the survey question either via Google forms, email or by fax to about eighty participating teachers and school administrators at School X.
- Collected the data within 30 days

The list in Table Five below reflected the anticipated procedural steps for the following twelve weeks.

Table 5

Summary of Timeline.

Time Line	Activity	Materials Needed	Analysis/Evaluation
First week	<ul style="list-style-type: none"> Distribute consent forms 	Consent Form	Verified Completion
Second – Fourth week	<ul style="list-style-type: none"> Distribute survey questionnaire Collect survey questionnaire 	Survey Questionnaire	Find common issues or problems, patterns, themes, and discrepancies
Fifth - Twelfth week	<ul style="list-style-type: none"> Analyze data 	Survey Questionnaire	Feasibility analysis Find common issues or problems, patterns, themes, and discrepancies
			Feasibility analysis

Data analysis. The method of data analysis involved a broad data categorization, interpretation, identification of patterns based on common or different themes. Thus, the researcher adopted:

- A unit of analysis of survey questionnaire
- Methods of analysis: Data categorization, interpretation, identification of patterns based on common or different themes and comparative case study.

- Confidence in findings: identified and communicated assumptions and biases that may influence the data collection and interpretation process.

Results/Findings. The researcher communicated results in the form of an exploratory research paper. Furthermore, the feedback from the participants on a technology-based CPD training design presented an alternative option for training teachers. Thus, the researcher:

- Indicated the purpose of the study
- Identified the problems or concerns that the study focused on,
- Singled out the barriers involved, provide data and the analysis and proposed solutions.
- Conveyed the information offered by the participants' using a coding system, and
- Maintained participants' privacy.

Chapter Four: Results

Introduction

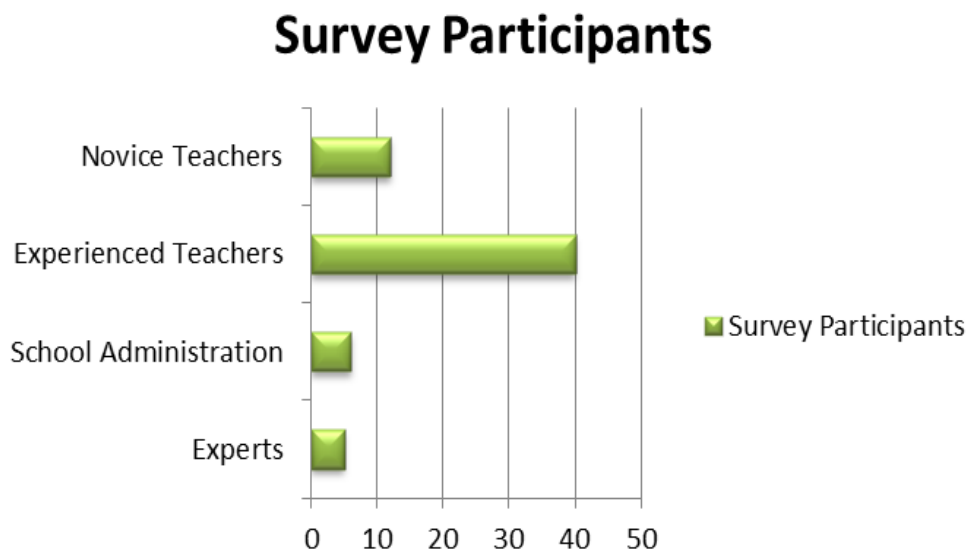
This study centered on exploring the benefits and deficits of the CPD training framework to determine the program's impact on the quality of education, teachers' performance, and student achievement in Ethiopia. However, accessing approximately 497,737 teachers in Ethiopia, covering 426,400 square miles (1104370.93 square Kilometers) of the country, presented a challenge for this researcher in terms of sample size and data collection. Thus, this research limited its focus to a school located in Addis Ababa, Ethiopia (henceforth referred to as School X) to compensate for these obstacles. Notably, the Ethiopian Ministry of Education manages the CPD training programs, as well as, the teacher training curriculum, the certification qualification and requalification processes, and the teaching and learning curricula. As such, School X uniformly follows the same CPD training programs, curricula, and qualification requirement processes set by the Ethiopian Ministry of Education.

Summary of Data Analysis

The researcher distributed consent forms to 80 potential research subjects at School X once the school granted permission to distribute survey questions in the production of a dissertation study. Of the 80 forms, 63 subjects completed the consent forms, which resulted in a return rate of 79%. The researcher then distributed the survey questionnaires to the 63 research participants and collected their responses through Google doc, fax, or email over a thirty-day period (from April 1st through April 30th). The number and role of these participants ranged from five school advisory board members, six school administrators, forty experienced teachers (teachers with more than three-year experience) to twelve novices (first/second-year teachers).

Participants. To protect the privacy of the participants, the researcher used a coding system and assigned a code to each. The researcher then grouped them into four categories based on their role at the school. The school’s advisory board members were grouped as the “experts,” and coded as “ExpX” (where X stands for the number assignment of each participant in that category). In the same manner, the researcher grouped the school administrators as SchAdminX (where X stands for the number assignment of each participant in that category). The teachers as TechX (where X stands for the number assignment of each participant in that category), and novice teachers (with one to two years of teaching experience) as NovTechX (where X stands for the number assignment of each participant in that category). As captured in Figure 18, the breakdown of the research participants in each category were as follows: 8% experts, 10% school administrators, 63% teachers, and 19% novice teachers ($N = 63$, where N is the number of survey participants).

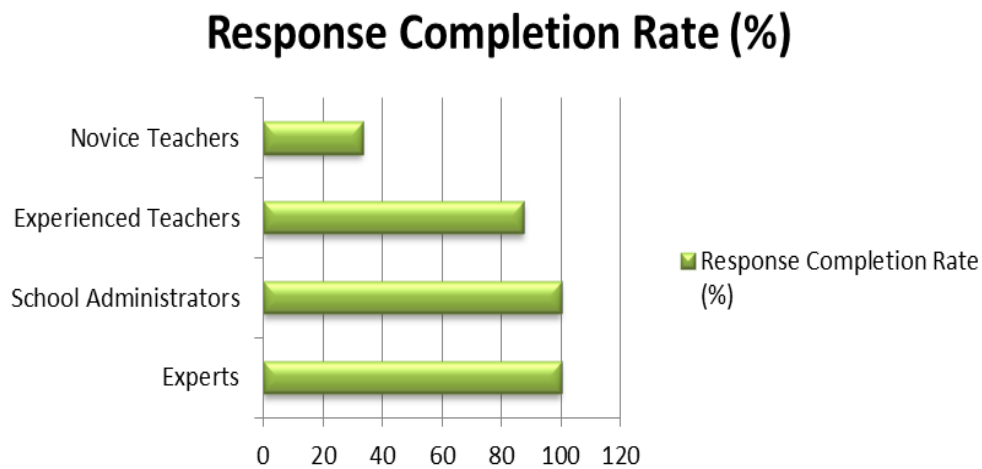
Figure 18: Survey Participants.



Note. A breakdown of the number of research participants

The Rate of Return. The completion rate of survey questionnaires varied in each category as illustrated Figure 19. The experts and school administrators responded to the survey questionnaires at 100% completion rate. Whereas 35 out of the 40 teachers responded at 88% completion rate (5 out of the 40 provided incomplete survey questionnaire responses), and 4 out of the 12 novices responded at 33% completion rate (8 out of 12 survey responses were incomplete).

Figure 19: Response Completion Rate (%).



Note. Survey response completion rates by category in percentage

Organization of Data Analysis

The data analysis was divided into three sections. Section one included survey responses from the open-ended questionnaires that served as supporting evidence to address the first research question. This section had three parts framed around the assumptions and expectations set by the Ethiopian Ministry of Education that the CPD framework will improve: the quality of education; teacher performance, and student achievement outcomes. In similar fashion, section two provided the evidence to address the second research question also framed around the same set assumptions and expectations (mentioned above).

The guiding research questions in this case study were the following:

1. What were the key efficiency and performance indicators of CPD training program's accomplishments?
2. What were the outcomes of the validity and effectiveness evaluation of the CPD program based the attitudes, experiences, and perceptions (beliefs) of the research participants?

The first research question (Research question one) attempted to address the impact of the CPD program on the quality of education, teacher performance, and students' outcome based on the attitudes, experiences, and perceptions of the research participants. The second question (Research question two) evaluated the program's validity and effectiveness using the evidence collected. To achieve this, the researcher utilized Trochim's internal validation logic and the PICOC effectiveness model viewed through the lens of Program Theory framework as the evidence-gathering strategy (Trochim 2006; Petticrew & Roberts 2005; Rossi et al., 2004).

Based on the recent trend of mobile phone explosion in Ethiopia, this study additionally investigated if mobile phones hold the promise to serve as a flexible delivery mechanism of CPD program to meet the needs of teachers in Ethiopia (GSMA, 2014). Thus, the third section of this chapter documented the attitudes and perceptions of 39 teachers from School X on an alternative, technology-based CPD framework design.

Themes. The researcher applied Voyant Tools, a Web-based text analysis software, to extract the most frequent words, terms, and phrases from the survey responses as captured in Figure 20. As a result, the following three themes emerged: the accomplishment of the CPD program, its weaknesses, and suggested improvements to the program.

Coding tag (henceforth referred to as REC) with a specific memo/action for follow up” (Saldana, 2013, p.98).

Using this coding technique, the researcher noted the survey responses from each participant as “positive,” “negative” or “REC” accordingly. For example, “the policy’s expectations were not proportional to needs” indicated a weakness in the framework; therefore, the researcher coded this statement as a “negative” response. Similarly, a "positive" response reflected its accomplishment, and a "REC" suggested action item for future improvement (Saldana, 2013).

Findings: Section One

Research question one. Rossi et al. (2004) remind program evaluators first to delineate if the assumptions and expectations were “appropriate.” Thus, this section attempted to identify the key efficiency and performance the CPD program’s accomplishments based on the set assumptions and expectations that it will improve: the quality of education; teacher performance, and student achievement outcomes.

On the quality of education. One response positively reflected that the program made “sound impact on the quality of education.” However, as shown in Table 6, 48 of the 49 responses (98%) did not acknowledge any significant accomplishment of the CPD framework on the quality of education. In this case, 27 of 49 responses (55%) reflected an area of weakness (noted as negative comments) and 21 of 49 responses (43%) highlighted areas of improvements (tagged as REC).

Table 6

The frequency of contextual survey responses on the quality of education

Survey Responses	Categories	Theme one: Accomplishments	Theme two: Weaknesses	Theme three: Remedial Action Items
Impact on the quality of education	Experts		5 Negative	5 REC
	School Administrators		4 Negative	5 REC
	Experienced Teachers	1 Positive	15 Negative	10 REC
	Novice Teachers		3 Negative	1 REC
Total number of responses	49	1 out of 49 (2%)	27 out of 49 (55%)	21 out of 49 (43%)

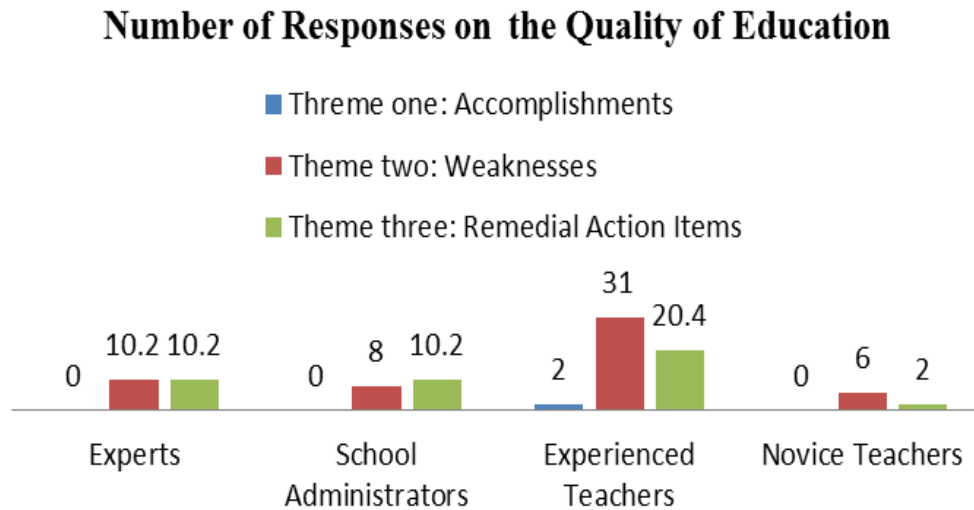
The participants in the “experts” category had five negative responses and five “REC” comments. Their responses recognized weaknesses in the “teacher recruitment qualifications” process and raised similar issues with the “licensing/relicensing requirement and enforcement” process. They also suggested that the CPD training “needs to be revised” to match the rising interest for “different ways of training teacher.” These participants pointed out that the “lack of involvement of educators” in the decision-making process contributed to the “decline in motivation” and “interest” that heightened the rate of teachers leaving the profession. The participants in the “school administrators” category had four negative responses and five REC comments. They added that “inadequate training,” as well as, the “lack of licensing and relicensing requirements” for teachers including the “leadership” created accountability issues.

Fifteen additional negative responses from the “experienced teachers” pinpointed the weaknesses in the training program and proposed at least ten areas of improvements. More specifically, these teachers highlighted the gap that exists between the imposed expectations and

real life outcomes. They identified their training as “ineffective,” and added that they lacked “sound leadership,” which also contributed to low “morale,” “motivation,” and “commitment” from teachers. The participants shared a general consensus that the teaching and learning training programs should encourage opportunities for increased teacher involvement. They expressed their discouragements due to the “lack of capacity” (resources, experience, and skills) and “feedback” from the leadership. Similarly, the less experienced teachers shared negative comments regarding the impact of their training on the quality of education. Their responses indicated the inadequacies in the training protocol and suggested that they would benefit from additional training if the training complemented their needs.

The information in this section provided evidence to address the first research question, which asked to identify the key efficiency and performance indicators of CPD training program’s accomplishments in boosting the quality of education. Based on the attitudes, experiences, and perception of education professionals at School X, there was a higher consensus (55.2%) that highlighted the weaknesses of the CPD framework in regards to its contribution to improving the quality of education than the recognition it received for its accomplishment (2%). As shown in Figure 21, out of the all the groups that participated, only one comment from an experienced teacher attributed the accomplishment of CPD framework as a “sound policy;” whereas, none of the other responses suggested any obvious accomplishment. A higher percentage of the responses from the experienced teachers (31%) expressed the weaknesses more so than the experts, school administrators and novice teachers combined (24.2%). The weaknesses in the program reflected the lack of “leverage,” “relevance,” “leadership,” “support,” “capacity,” and that the training they received was “inadequate,” and poorly managed.

Figure 21: Number of survey responses on the quality of education (%).



Note. The number of survey responses in percentage

Out of the 49, 21 responses (42.8%), participants identified teacher attrition rates as a key efficiency and performance indicator of a problem to achieve a higher quality of education. Experienced teachers expressed a greater percentage of responses of improvement (20.4%) followed by the experts (10.2%), school administrators (10.2%), and novice teachers (2%).

On teacher performance. Table 7 captured the data that reflected the overall outlook of the accomplishments, weaknesses and actionable items by category. It illustrated that 9 out of 70 (13%) provided positive responses with regards to the framework’s accomplishment in improving teacher performance. Whereas 61 out of 70 responses (87%) pointed to its weaknesses and 33 out of 70 (47%) suggested future improvements.

Table 7

The frequency of survey responses on teacher performance

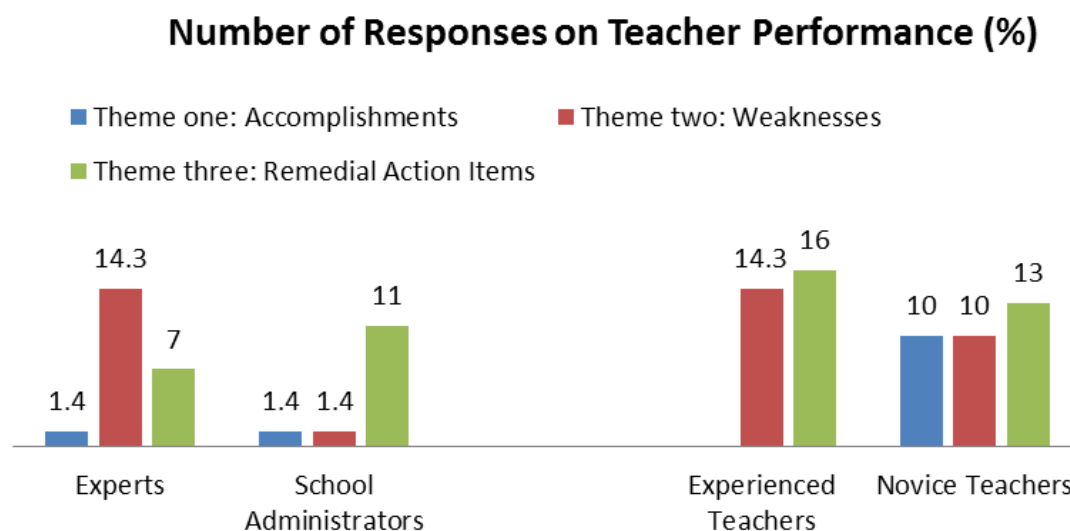
Survey Responses	Categories	Theme one: Accomplishments	Theme two: Weaknesses	Theme three: Remedial Action Items
Impact on teacher performance	Experts	1 Positive	10 Negative	5 REC
	School Administrators	1 Positive	1 Negative	8 REC
	Experienced Teachers		10 Negative	11 REC
	Novice Teachers	7 Positive	7 Negative	9 REC
Total number of responses	70	9 out of 70 (13%)	28 out of 70 (40%)	33 out of 70 (47%)

As shown in Table 7, a response from the “expert” category noted that the training program provided “a positive influence” on teacher performance. Another response from the “school administrator” group added that the current CPD framework “encouraged best practice.” Seven additional positive responses from the novice teachers also pointed out that they received “adequate training” that “influenced performance.” The training they stated helped develop “skills,” and “stronger relationships with students.” Overall, 13% of the survey responses reflected the program accomplishment in influencing teacher performance.

On the other hand, the responses from the experienced teachers presented a different picture. These participants provide no indication of the program’s impact on the performance of teachers. Also shown in Table 7, this group pointed to ten negative comments in addition to ten more negative comments from the expert category, one from a school administrator, and 7 from the novice teachers, which summed up 40% of the overall survey responses that reflected the program’s weaknesses in influencing teacher performance.

The highest number of responses (47%) highlighted the action items for improvements from all four categories. Five “REC” responses came from the experts, in addition to eight from school administrators, eleven from teachers, and nine more from the novices.

Figure 22: Number of survey responses on teacher performance (%).



Note. The number of responses in percentage

The information in this section provided evidence to address the accomplishment of the framework in boosting teacher performance. Overall, 13% of the number of responses indicated that the CPD training impacted teacher performance, where 10% of the responses originated from the Novices category, and the remaining 3% came from the experts and school administrators. However, as shown in Figure 22, none of the experienced teachers reflected positively on the program’s accomplishment.

Based on the attitudes, experiences, and perception of education professionals at School X, 40% of the responses reflected weaknesses and 47% of the responses put forth action items for improvements. A larger proportion recorded that the framework “lacked practical training,” “does not have access to high-quality training,” “lacked support,” and the “opportunity to get additional training.” In this case, 38 out of 70 responses (40%) pointed out the weaknesses, of

which 61 % of the responses originated from teachers (category 3 and 4). Out of the 70, 33 (47%) responses identified “lack of capacity,” “poor working conditions,” “lack of parent involvement,” “lack of student interest,” and “teacher attrition” as key efficiency and performance indicators. Out the 33 responses, 20 (61%) originated from teachers (both experience and first/second-year teachers). They additionally expressed the need to “update the training,” provide “feedback,” improve “management,” and maximize “academic freedom” for teachers.

On student achievement. As tabulated in Table 8 the survey data reflected the overall outlook of the accomplishments, weaknesses and actionable items by category. It illustrated that 8 out of 42 (19%) provided positive responses with regards to the framework’s accomplishment in improving student outcome. Out of the 42, 20 responses (48%) pointed out the weaknesses of the program in impacting student performance, and 14 (33%) identified the remedial action items for future improvements.

Table 8

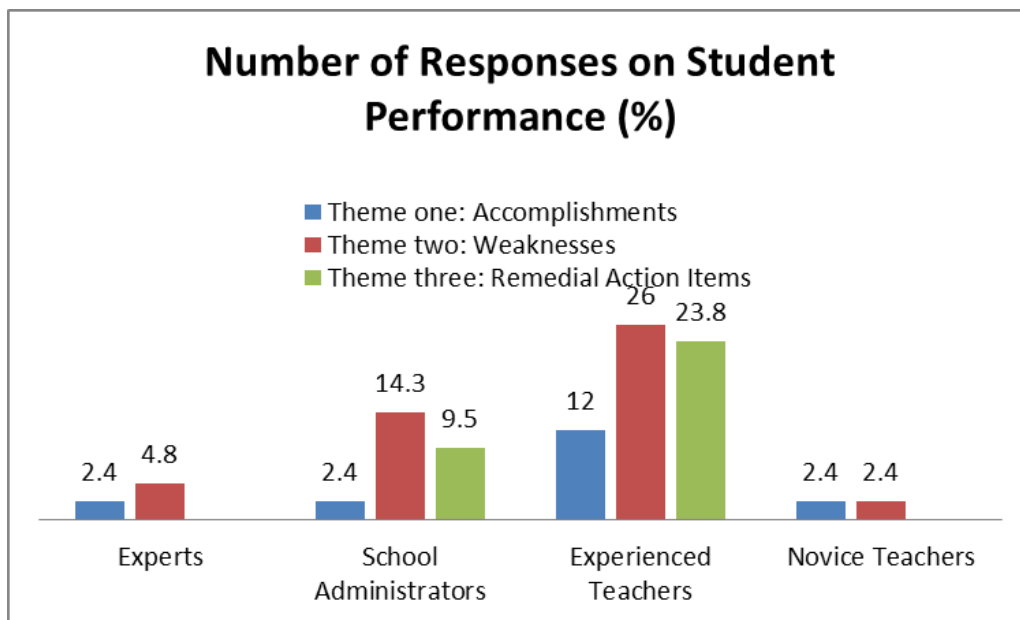
The frequency of survey responses on student achievement

Survey Responses	Categories	Theme one: Accomplishments	Theme two: Weaknesses	Theme three: Remedial Action Items
Impact on teacher performance	Experts	1 Positive	2 Negative	
	School Administrators	1 Positive	6 Negative	4 REC
	Experienced Teachers	5 Positive	11 Negative	10 REC
	Novice Teachers	1 Positive	1 Negative	
Total number of responses	42	8 out of 42 (19%)	20 out of 42 (48%)	14 out of 42 (33%)

Five responses from experienced teachers focused on the “benefits” of the training. The other three responses centered on “building relationships with students.” Twenty other responses reflected the “lack of capacity” as key performance indicators. Problems with “large class size,” “student engagement,” and “student behaviors” frequently surfaced in the documented responses from all four categories. Ten responses from experienced teachers encouraged “revising the curriculum,” shifting the teaching practices to embrace “problem-solving skills,” and “building better relationships” with students. They emphasized motivating students and increasing “interest” to improve classroom behavior. Four more responses from school administrators highlighted the need to “involve educational professionals in the decision-making processes” of the program development.

As illustrated in Figure 23, 19% of the responses noted the positive impact on student achievement. A higher percentage (48%) highlighted its weaknesses and about a third (33%) of the responses made recommendations for future improvements.

Figure 23: Number of responses on student performance (%).



Note. The number of responses in percentage

The information in this section provided evidence to address the accomplishment of the framework in boosting student performance. Response from an expert noted that the “theoretical training provides a firm base,” and another added that the current CPD framework encouraged “student-centered teaching” methodology to facilitate learning. Six more highlighted that the “theoretical training of teachers” in the subject area “benefited” students. As shown in the table above, 8 of the 42 responses (19%) indicated levels of accomplishments regarding enhanced student outcome. The responses reflected “better preparation,” “help with assessment,” “kept an open relationship with students,” “better communication skills with students,” “related better with students,” and “helped create a stable environment for the student.” However, a higher number of responses (48%) pointed towards the framework's weaknesses more so than its accomplishments. Out of 14, 10 responses (71%) originated from teachers they identified “student engagement,” “student/teacher relation,” “class size,” and “student behavior” as key efficiency and performance indicators. Out of 42, 14 responses (33%) indicated “lack of capacity,” “lack of student interest,” and teacher shortage as the rising concerns that impact student performance.

Findings: Section Two

Research question two. Rossi et al. (2004) point out that if the assumptions and expectations were “appropriate” for a particular program, then the next step is to figure out “whether the program is enacting them in an effective manner” (p. 93). They add that a program’s validity “requires a judgment call” that is based on societal conditions and “strengthens if those judgments are made collaboratively with relevant experts and stakeholders” (Rossi et al. 2004, p.153). Thus, Rossi and his team conclude, if the program operates as intended, it will produce the expected outcome to the intended recipients (Rossi et al. 2004).

Furthermore, this exploratory study added another measure to address questions concerning the efficacy of the CPD program. Petticrew and Roberts (2005) stated that if “key questions remain unanswered” (p. 21), the PICOC model could serve as a useful tool to create a general “picture of the evidence” (p.21) of effectiveness (Petticrew and Roberts, 2005). These evaluation steps identify “aspects of program’s performance that are most important” to the stakeholders, and provide some indication of the “level of performance” based on observed outcomes (Rossi et al., 2004, p. 173). To this effect, this section attempted to evaluate the validity and effectiveness of the CPD program based on the attitude, experience, and belief of the research participants who played different roles and held various responsibilities at the school.

On the quality of education. The researcher attempted to account for the evaluation of the validity and effectiveness of the CPD framework in achieving improved quality of education. Based on the survey data, only 2% attributed to the program’s positive outcome, whereas, 98% pointed out its shortcomings. In this context, 1 out of 49 responses claimed that the CPD program was founded in sound policy; however, 48 out of the 49 responses revealed negatively on different aspects of the program that directly or indirectly affected them and others around them. The comments reflected increased teacher attrition rates, the absence of licensing and relicensing requirement, and low National Learning Assessment (NLA) scores as key indicators. Out of the 49, 21 responses (43%) identified teacher attrition rates as a key performance indicator of the problem to achieving a higher quality of education. Out of the 49, 27 responses (55%) revealed that the absence of licensing and relicensing requirements and the lack of teacher involvement in the decision-making processes as the reasons behind the declining quality of education.

On the teacher performance. The researcher also attempted to account for the evaluation of the validity and effectiveness of the CPD framework in achieving improved teacher performance. Based on survey evidence out of the 70, 9 responses (13%) claimed that the skill development training positively impacted teacher performance. The remaining 61 responses (87%) indicated multiple factors as to why the program fell short. These factors included the lack of adequate training opportunities, insufficient resource, class size, inadequate support from leadership, and low pay.

On the student achievement. The validity and effectiveness evaluation of the CPD framework indicate that out of 42, 8 responses (19%) emphasized improved student achievement outcomes due to student-centered teaching practices. On the other hand, out of 42, 34 responses (81%) indicated that the program did not perform in a manner where it resulted in notable improvement. They identified student engagement as the key effectiveness measure.

Findings: Section Three

Technology-based CPD training design. The study additionally explored a technology-based CPD training design. As shown in Table 9, 38 out of 39 participants expressed interest in technology based CPD training design. One expressed concerns that it “may negatively affect the education system.” Three others raised concerns about the unreliable Internet connections. Overall, the responses from the teachers communicated that mobile phones are the most accessible form of technology they owned and that it would present an excellent opportunity for teachers. They shared that technology may help bridge gaps: it would enable teachers to build a support system, increase capacity by sharing resources, provide easier access to the training program, and increase training opportunities.

Table 9

The application of technology to the training program

Technology-based CPD training design	Research Participants	Number of Responses (%)
Number of teachers that have mobile phones	35 out of the 39 have mobile phones	90%
Number of teachers that have access to computer	18 out of 39 do not have access to a computer	46%
Number of teachers with Internet access	17 out of 39 have Internet access	43%
Teachers' willingness to get continuous professional development (CPD) training	38 out of 39 show willingness to get CPD training on mobile phones	97%

As shown in Table 9, a total of 39 teachers at School X participated in completing the survey questionnaires. Out of which, 35 (89%) had mobile phones. On the other hand, 18 out of the 39 (46%) did not have access to a computer, and 17 out of the 39 (43%) did not have access to the Internet. Overall, 38 out of 39 (97%) showed a willingness to receive CPD training using their mobile phones.

Summary of Results

This case study presented analyses of the survey data to address the Research Questions. The researcher analyzed the text responses from 63 participants from School X that accounted for the participants' attitude, experience, and perception of the CPD framework. This study recorded the responses based on frequency for each category. The data served as evidence for a comparison between the pre-set conditions of the CPD framework to the observed outcomes based on the attitudes, experiences, and perceptions of stakeholders. Eleven percent of the responses attributed the framework's accomplishment to the intended outcomes. Forty-seven

percent of the responses accounted for the weaknesses of the CPD framework and pinpointed why the program did not achieve the expected outcomes. A sizeable portion of the participants, forty-two percent, made recommendations for improvement to the CPD framework. The responses provided feedback on the needs not met and demonstrated the gap that existed between the expected outcome and the actual outcome for the target population.

In terms of a technology-based CPD training, the research participants highlighted concerns about unstable Internet connections; nevertheless, 97% communicated interest in using their mobile phones for CPD training. They added that mobile phones would help build “network of support,” provide “readily available resource,” “access teaching material,” offer “cheaper options to training,” and provide useful means to integrate technology in the classroom.

Limitation

This study did not attempt to prove that the CPD framework alone guarantees quality improvement in education and teacher performance. Nor did it attempt to prove that the CPD framework alone was the cause of the effects on student achievement outcomes. Instead, the study centered on seeking evidence to evaluate the CPD framework based on the survey data based on the perspectives of the stakeholder in the research. However, the sample size and sole reliance on survey questionnaires limit the scope of the study to make a generalized conclusion about the performance of the CPD framework in Ethiopia.

Chapter Five: Discussion

Introduction

This study underscored Ethiopia's intensified investment in the 2009 framework as its national intervention program to improve the quality of education through improved teachers' performance, which in turn would impact students' achievement outcomes. Therefore, the purpose of this research focused on finding evidence to support this claim. With this intent, this case study centered on evaluating the impact of the 2009 CPD framework based on the evidence presented by the education practitioners at a school located in Addis Ababa, Ethiopia. Hence, the information gathered in the study served as a guide for evaluating the performance of the 2009 CPD framework.

Even though the findings from the data analysis revealed limited benefits attributed to the CPD training program, the evidence pinpointed at the gap that existed between the expectations and the real-life outcomes. The findings, more importantly, highlighted the key indicators that are essential to bridge this gap. In particular, 11% of the responses attributed to the framework's accomplishment, while, 47% accounted for the weaknesses of the CPD framework, and 42% addressed its deficiencies and made specific recommendations for improvements to meet the needs.

Summary of the Study

This case study involved an evidence-based evaluation process that served as a tool for assessing the CPD framework's accomplishments. It used the information gathered from the survey questionnaires as empirical evidence to reveal the actual outcome based on the attitude, experience, and beliefs of the participating research subjects. Furthermore, the study included discussions on the validity and effectiveness of the framework based on observed evidence and

its relative closeness to the intended outcome. More specifically, the study focused on identifying key efficiency and performance indicators to address the guiding research questions.

The study first attempted to explore the framework's accomplishments to improve the quality of education, teachers' performance, and students' performance in the context of Ethiopia. Second, it discussed the validity and effectiveness of the program based on the closeness of the policy's intended outcome and the observed outcomes. The study used the set assumptions and expectations of the CPD framework placed by the Ethiopian Ministry of Education as the pre-set conditions (Wholey, 1979; Petticrew and Roberts, 2005). Thus, the case study revealed the practical application of the CPD framework by investigating the relationships between the quality of education, teacher performance, and student achievement from the perspectives of the education practitioners at a school in Ethiopia through the lenses of program theory, and comparative analysis.

As part of the evidence-seeking strategies, the study adopted Trochim's logic (2006) and the PICOC model (Petticrew and Roberts (2005) for validity and effectiveness checks, respectively. Trochim's internal validity check helped determine if the CPD intervention (the program) contributed to the improvement in teachers' performance (the cause), which in turn, improved students' achievement scores (the outcome). Therefore, a key validation question asks if the training program caused the observed outcome. In this case, the relative closeness of the observed outcome to the intended outcome, based on the attitudes, experiences, and beliefs of the educational practitioner, highlighted the credibility of the framework. For this purpose, the study involved participant with different roles and responsibilities because the validity and believability of the outcomes vary among stakeholders (Trochim 2006).

The PICOC effectiveness check additionally helped specify the key indicators based on survey responses to address questions concerning the efficacy of the CPD program (Petticrew and Roberts, 2005). Petticrew and Roberts (2005) states that if “key questions remain unanswered” (p. 21), the PICOC model could serve as a useful tool to create a general “picture of the evidence” (p.21). This model establishes that, if a program operates as intended, it will produce the expected outcome to the intended recipients, and adhere to the set of standards (Rossi et al., 2004; Petticrew and Roberts 2005).

The study also explored the application of technology as an alternative intervention approach to transforming the CPD program. The evidence gathered strongly suggested that technology would serve as an alternative ground-up approach for CPD training design. More specifically, the findings implied that a mobile phone-based intervention plan could help remediate some of the scenarios identified by the research participants in this case study (Hattie, Masters& Brich, 2014).

Discussion of Results

Survey. The researcher distributed 80 survey questionnaires at School X of which 63 participants submitted their responses that resulted in a return rate of 79%. The breakdown of the research participants were: 8% school advisory members (labeled as the “experts”), 10% school administrators, 63% experienced teachers (with more than two years of experience), and 19% novice teachers (with a maximum of two- year experience). The survey completion rates also varied as follows: the school leadership (the school’s advisory members and administration team) completed the survey at 100% completion rate, the experienced teachers completed the survey at 88% completion rate, and the novices responded at 33% completion rate.

The study adopted Voyant Tools, a Web-based text analysis software, to extract the most frequent words, terms, and phrases from the contextual survey data and three themes emerged: the accomplishment of the CPD program, its weaknesses, and suggestions for improvements. Furthermore, the study employed the “Evaluation Coding” technique to analyze the survey responses. This technique helped note the survey responses that reflected positively or negatively on the CPD program and tagged the recommended suggestion for future improvements. In cases where the survey response addressed more than one theme, the researcher made logical inferences to include the data in areas deemed as the best fit.

Results. The discussion of results was divided into three sections. Section one discussed the findings to address the first research question; section two elaborated on the evidence to address the second research question, and the third section expanded on the attitudes and perceptions of research participants on a mobile phone-based CPD framework design.

Discussion: Section One

Research question one. The first research question explored the benefits and deficits of the CPD training framework to determine the program’s impact on the quality of education, teachers’ performance, and student achievement at School X, in Ethiopia. Loucks-Horsely et al. (2010) noted that exploring the “why” a professional development program is necessary helps determine “how” the program would address specific issues to achieve the expected outcome, and “how” it should be evaluated (Loucks-Horsely et al., 2010). The Ethiopian Ministry of Education introduced the 2009 CPD framework to address the declining quality of education, decreasing teacher performance, and lowering student scores. The Ministry set assumptions and expectations that this framework would spur change to produce the intended outcomes. As its evaluation tool, this institution applies the National Learning Assessment scores at fourth, eighth,

tenth and twelve-grade levels. However, studies have shown that students' assessment results alone do not provide a complete picture of the program's performance (Hattie 2012; NSDC 2002; Trochim 2006). These scores do not prove if the professional development was responsible for it or not, or what needs to be done to improve the outcome.

Program evaluation, according to Weiss (1998), involves a "systematic assessment of the operation and (or) the outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement of the program or policy" (p, 4). To this effect, Dohj and Verspoor (2013) suggested that Ethiopia's education policy needs to integrate professional development opportunities to evaluate teacher performance as opposed to supporting a system that mainly focused on the supply end of the teaching profession. This study, therefore, focused on seeking evidence to determine whether the CPD framework influenced notable change in the overall quality of education in the context of Ethiopia.

On the quality of education. The analysis of the data indicated that 98% of the responses did not acknowledge any accomplishment of the CPD program on the quality of education. The responses highlighted the framework's shortfall in enforcing quality assurance measures and suggested improvement for the success of the program. The research participants expressed concerns about the lack of capacity (resources, experience, and skills) and feedback from the leadership. Increased training opportunities, the involvement of educators in the decision-making process, supportive leadership, and better working conditions were some of the actionable remedial items they suggested. These participants warned that the lack of involvement of educators in the decision-making process contributed to the decline in motivation for teachers, which heightened the rate of teachers leaving the profession.

On teacher performance. The findings revealed that 13% of the responses reflected positively on the framework's accomplishment. These responses indicated that CPD framework encouraged the adoption of pedagogical practices to build stronger teacher-student relationships that were necessary to positively impacted performance. On the other hand, 87% pointed to its weaknesses and suggested future improvements. These responses reflected that the framework lacked adequate practical training for teachers and highlighted the need to revise the training protocol to match specific demands. They expressed shifting the teaching practices to embrace problem-solving and cognitive skills to improve student engagement in the classroom.

On student achievement outcomes. The findings showed that 19% of the responses reflected positively on the framework's accomplishment. They noted that the training provided teachers with a sound theoretical base that focused on student-centered teaching practices and building relationships with students to impact student performance. On the other hand, 81% pointed to the framework's weaknesses and recommended actionable items to enhance the program's performance. These responses indicated that the lack of capacity and student engagement raised concerns about student performance. They called for skills development training to communicate better with students, parents, and the leadership and to create a stable environment for the student.

Discussions: Section Two

Research question two. Granted the Ministry of Education developed the 2009 CPD framework based on a generalized conclusion from a need analysis study and five international case studies, the Ministry was not engaged in a continuous evidence gathering effort to track the program's performance level. In this regard, Trochim (2009) reminds program evaluators to establish co-variation of cause and effect relationship to provide evidence that they are related.

Hence, this section addressed the program's validity and effectiveness question based on empirical evidence to identify "aspects of program's performance" that was "most important," provide some indication of the "level of performance," and to serve as a feedback system (Rossi et al., 2004, p. 173).

On the quality of education. The findings revealed that the operational function of the framework produced outcomes that were different from the intended outcomes set by the Ministry of Education. Rossi et al. (2004) call attention to the fact that the validity of an effective program "requires a judgment call" based on societal condition (Rossi et al. 2004, p.153). In this context, the comments from the participants indicated that the structured courses provided limited scope to meet specific needs. Furthermore, the allocated time for CPD training (60 hours a year) did not allow sufficient time for adequate skill development opportunities to produce effective results. The research participants identified teacher attrition rate as a key indicator of an increasing problem to achieving a higher quality of education. They urged for improvement to address low morale, motivation, and commitment from teachers, and the need to enforce licensing and relicensing requirements.

Other studies show that professional development training programs that involved teachers in the design process made a considerable impact on teachers and students performances (Wayne et al., 2008). Teachers' participation in the decision-making process would enhance the success rate of any professional development program (Craig, Kraft, and Du Plessis, 1998; Afghan et al., 1997; Ginsburg, 2010). Therefore, incorporating teachers' involvement in the early stages of the program development process would initiate interest and motivation, which are the most important ingredients in achieving improved performance.

On teacher performance. The study discussed the validity and believability of the program's achievement outcome based on the participants' perception of its relative closeness to the intended outcome. In this case, the responses from the stakeholders varied significantly. The school leadership noted issues that the training program lacked relevance because the training was not mandatory or frequent enough to become impactful. They concluded that it did not produce highly skilled trainers and trainees to make an impactful difference. Responses from the teachers pointed to revisions of the training program to reflect needs, and more frequent opportunities for training over an extended period to allow for professional development and growth. They pointed that the lack of support system from the leadership contributed to rising frustration at the job and the decline in commitment. Theorists Ryan and Deci (2000) conceptualized motivation as being "moved" (p. 54) to do something and to commit to it. To this effect, Dohj and Verspoor (2013) highlight motivation as a critical element to impact performance.

Alternatively, "effect size" is a tool that compares various teaching and learning practices to provide teachers a strategy to identify effective methods (Hattie 2009 & 2012). Hattie (2012) explains that effect size comparison allows teachers and school leaders to compare teaching and learning methods that produce an effective result by making independent comparisons. Most teaching and learning methods may influence performance, none the less, the question is not if a particular practice has an effect rather it is how much of an effect it produces. Based his study of over 800 meta-analyses, Hattie (2009 and 2011) established effect size of 0.4 as the cutoff mark for identifying effective practices. Consequently, he reports that formative evaluation (0.9), teacher credibility (0.9), classroom discussion (0.82), feedback (0.73 - 0.75), teacher-student relationships (0.52 – 0.72), and motivation (0.4 – 0.48) have proven higher rates of effectiveness

compared to most common concerns about the class size (0.21), subject area knowledge (0.09), teacher education (0.11 – 0.12), and school leadership (0.33-0.39), which have effect size values less than 0.4 (Hattie, 2012).

On student performance. In this case, the responses pinpointed that the curriculum does not encourage student engagement and that the teaching materials were outdated. They highlighted that focusing on self-improvement strategies for students and increasing parents' engagement would impact student performance. For this reason, incorporating a “backward design” to the CPD framework prioritizes relevance based on student needs (Wiggins & McTighe, 2005). This process begins with explicitly identifying the desirable student outcome, then tailors the CPD training to produce the specified outcome, and utilizes empirical evidence to evaluate the training's accomplishment to determine if the desired objective was achieved or not (Wiggins & McTighe, 2005; HFRP, 2006).

Discussions: Section Three

Technology-based CPD training design. This section explored a technology-based CPD training design based on the feedback received from the 39 teachers from School X. Although there were concerns that related to the Internet connectivity issues, 97% of responses expressed interest in technology-based CPD training design. Overall, the responses communicated that mobile phones present an excellent opportunity to develop a support system for teachers. These participants highlighted that using their mobile phones for CPD training would present easy access to the training program. A mobile phone-based training would provide an alternative ground-up approach for CPD training, and allow increased time allocation and frequent training opportunities. Furthermore, a technology based CPD program would provide an evidence-based evaluation system to remediate the scenarios identified in this study.

Conclusion

This case study centered on seeking evidence to evaluate the performance of the 2009 CPD program framework in the context of Ethiopia. In the absence of a methodological approach to evaluate the program's performance and track its progress, this study investigated program evaluation tools to provide a mechanism to link theoretical and practical application of the CPD framework. As a result, the study centered on evaluating the performance of the CPD program based on the attitudes, experiences, and beliefs of education practitioners at a school located in Addis Ababa, Ethiopia. The empirical evidence from these practitioners served to evaluate the relative closeness of the observed outcomes to the intended outcomes. Additionally, the study identified key performance indicators to evaluate the validity and effectiveness of the program.

The study's findings indicated that the CPD framework's assumptions and expectations were unfounded. The data analysis also revealed the program's shortfall on the validity and effectiveness measures and confirmed the gap that existed between the observed and expected outcomes. This study explored a mobile phone-based CPD framework approach for creating a culture of continuous learning and for supporting an evidence-based feedback system. Such a system helps monitor the entire system and track the impacts of the implemented changes.

Importantly, this study shed light that CPD framework must broaden its scope to integrate multiple factors that influence the quality of education, teacher performance, and student achievement. In this context, Levin (2008) points out that a single change, a new curriculum, an accountability system, a few influential leaders, or incentives could not produce sustainable outcomes. Fullan (2011) similarly notes that fragmented strategies or singling out one program or an intervention plan disrupt the whole system reform. Thus, the study concluded that building

capacity by raising expectations; building networks of relationships, increasing motivation, and applying technology to provide a feedback system would bridge the gaps between the expected and real-life outcomes.

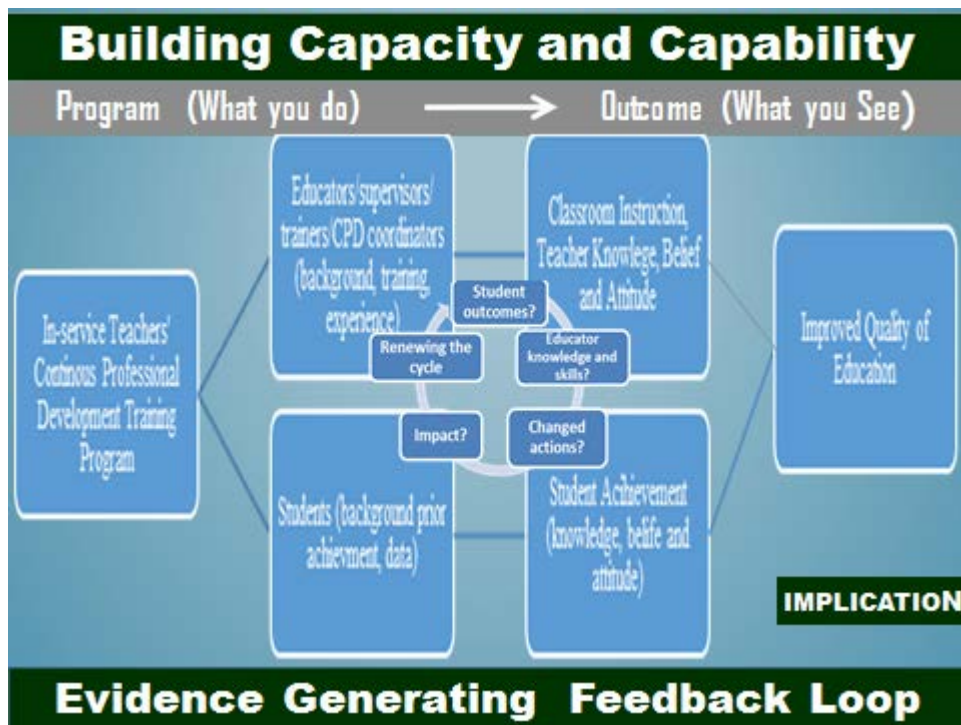
Implications for Practice

Today, the Ethiopian student population under the age of 18 makes up 49 % (44,555,953) of the total 90, 144,874, which is supported by 0.55% (497,737) of the k-12 teaching population (MoE, 2015). What this indicates is the fact that it is a tremendous challenge for Ethiopia to train an adequate supply of teachers to meet its demand. An equally disconcerting reality is the fact that studies conducted by the Ministry of Education show that about 70 percent of teachers out of the 0.55% teaching population in Ethiopia have plans to leave or would leave the teaching profession if they get another job offer (Getahun et al., 2016; MoE 2015). It is a staggering fact that must be considered when addressing the quality of education in Ethiopia. Therefore, how Ethiopia can maximize its teachers' potential without stretching them too thin calls for immediate attention.

Hence, this study advocated for a well-designed, evidence-based CPD program evaluation process to provide a continuous feedback system for monitoring the program's performance level. If the magnitude of impact was not significant to cause a measurable effect on the proximal outcomes; then, it becomes evident that the resulting impact was minimal to spur notable change. The CPD framework, additionally, must involve teachers at the early stages of the design to increase their buy-in, ownership and commitment to implement the training in a purposeful and meaningful manner (Horsely et al., 2010; Webb (2008); Wayne et al. 2008; OECD, 2013; Desimone, 2009; Guskey; 2002).

Furthermore, Timperly, Wilson, Barrar, and Fung (2007) highlight that adequate professional development training could take a minimum of three to five years to produce effective results. Hattie et al., (2016) suggests creating a system wide approach to build “capacity and capability within the system” (p.4). Fullan (2011) adds that fundamental base for the system to succeed as a whole, it must be built on the synergy of individuals and innovative technology to support the entire system.

Figure 24: Building capacity and capability within the Ethiopian education system: An evidence generating CPD feedback look.



Therefore, as figure 24 illustrates, the foundation for a successful CPD framework, in Ethiopia, must incorporate a data-driven approach to track changes over time to provide evidence if the program produced the expected outcome for the intended population.

Recommendations for Future Research

Ethiopia needs to address teacher performance when dealing with the issue of quality of education. To this effect, studies show that the quality of education is strongly tied to the context of teachers' performance more so than the pupil to teacher ratio, curricular content, or school infrastructure (UNESCO, 2015). At the same time, there is considerable evidence that reveals teacher motivation as a critical element of effective teacher performance (UNESCO Education Sector, 2013; Dohj and Verspoor, 2013). The 2016 International Policy Dialogue organized by the United Nations Educational, Scientific, and Cultural Organization's Education Sector (UNESCO/ED) highlights the fact that developing a framework for action to increase teacher motivation would reduce teacher attrition rates. This framework would provide teachers a support system to sustain morale and elevate motivation. In the same manner, Ethiopia must zero-in its focus on teacher motivation to actively influence teacher performance, which ultimately would improve its quality of education. But, the question of "how" Ethiopia should effectively address the issue of teacher motivation as a critical element of teacher performance requires further study.

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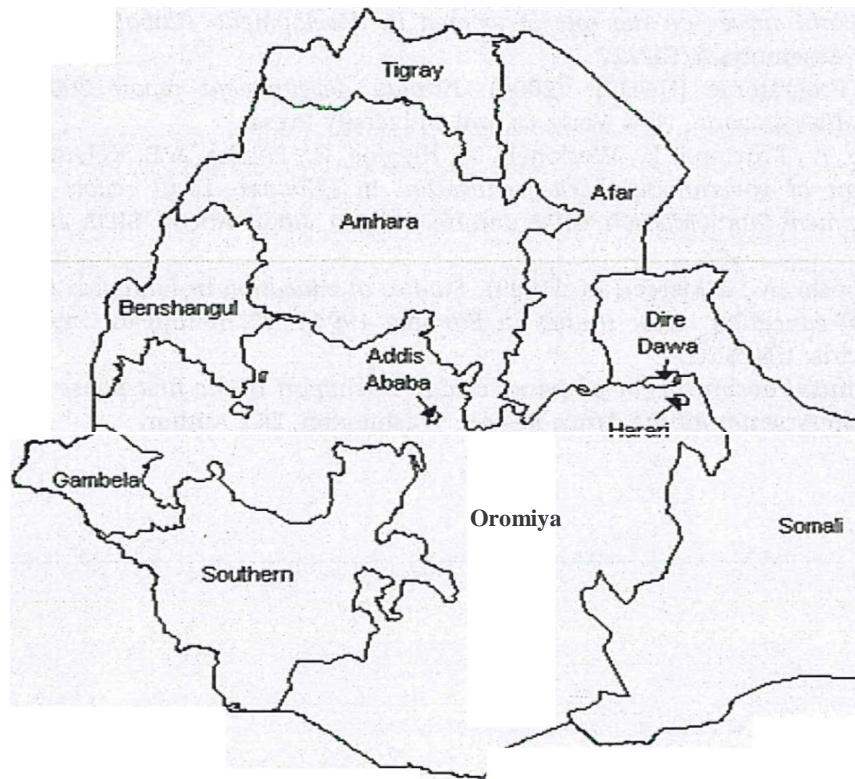
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APPENDIX A
Map of Ethiopia and the National Regional States



Source: ^(C) FAO/GIEWS 2000

APPENDIX B

Conducting survey questionnaire in a qualitative study
(Opportunities and challenges in the Ethiopian Education System)

The research targets pre-service student teachers and in-service teachers in Ethiopia in an attempt to improve the quality of education and maximize student achievement goals.

Research Questions	Interview Questions
<ul style="list-style-type: none"> • What are the current qualification requirements for primary and secondary school teachers? • What are the re-certification requirements for primary and secondary school teachers? 	<p>Expert Questions:</p> <ul style="list-style-type: none"> • What do you think of the teacher recruitment procedure? • What do you think about the teacher qualification requirements? • How do you handle trainees who see teaching as a temporary work? • How do you evaluate the training program? • What would you change? • What would you maintain? • What are the requirements for the re-certification process? • What would you change? • What would you maintain?
<ul style="list-style-type: none"> • What are the current remediation-plans to improve the quality of education? 	<ul style="list-style-type: none"> • What are the problems you are facing? • How long have you had this issue? • What do you think will help solve your

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<ul style="list-style-type: none"> • What indicators are being used to <u>identify problems</u>? • What indicators are being used to <u>identify progress</u>? 	<p>problem?</p> <ul style="list-style-type: none"> • What would you like to add?
<ul style="list-style-type: none"> • What are current <u>views of teachers about the links between teacher quality and quality of education</u>? • What <u>challenges do teachers face in providing quality education</u>? • What are the <u>current remediation plans to improve the quality of education</u>? • What <u>indicators are being used to identify problems</u>? • What <u>indicators are being used to identify progress</u>? • What are <u>current leadership roles to support teachers and improve the quality of education</u>? 	<p>IN-SERVICE TEACHER QUESTION:</p> <ul style="list-style-type: none"> • Describe your relationship with your students? • Describe your relationship with other teachers? • Describe your relationship with school administrators? • Describe how you would address if you run into a problem? Whom do you go to first? • What subject do you teach? • What subject do you like to teach? • What are your students learning? • How do you assess your students? • How do you think you can serve your students better? • How do you address problems with student achievement? • What types of issues do you run into as a teacher? • How often do those issues come up? • How do you communicate those issues with

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	<p>other teachers or school administrators?</p> <ul style="list-style-type: none"> • How do you think you can serve your students better? • What would you like to change? • What would you like to maintain? • What would you like to add?
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<ul style="list-style-type: none"> • How would <u>“mother-tongue” training instructions</u> help attain higher quality education? • What are <u>current views of teachers about the links between teacher quality and quality of education?</u> • What <u>challenges do teachers face in providing quality education?</u> • What are the <u>current remediation plans to improve the quality of education?</u> • What <u>indicators are being used to identify problems?</u> • What <u>indicators are being used to identify progress?</u> • What are <u>current leadership roles to</u> 	<p>PRE-SERVICE TEACHER:</p> <ul style="list-style-type: none"> • Why did you decide to become a teacher? • Can you think of a teacher you liked as a student? • What was special about this teacher? • Can you think of a teacher you did not relate to as a student? • What do you think this teacher could have done better? • Which program are you currently enrolled in (Certification +1, +2, or Diploma)? • Do you feel that you are getting adequate training? • Do you feel that you could benefit from additional training? • What are you looking forward to as a new teacher?
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<p><u>support teachers and improve the quality of education?</u></p>	<ul style="list-style-type: none">• What are you worried about as a new teacher?• What subject would you like to teach?• If you can teach multiple subjects, what another subject would you like to teach?• How do you feel about teaching a subject you are not familiar with?• What are your worries about teaching a subject you are not familiar with?• What language do you speak at home?• What other language do you speak?• If the training used your “mother-tongue,” do you think it would help you understand better?• Do you think your students would also benefit from learning using their “mother-tongue?”• How difficult do you find it to teach in another language?• What would you like to change about your training?• What would you like to maintain?• What would you like to add?
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<ul style="list-style-type: none"> • What are <u>current leadership roles to support teachers and improve the quality of education?</u> 	<p>School Administrators:</p> <ul style="list-style-type: none"> • Describe your relationship with your students? • Describe your relationship with teachers? • How often do you have a meeting? • How often do teachers or students come to you to express their concerns? How would you handle it? • Did you receive training on how to administer schools? If so, how often do you get re-training? • Whom do you report to when issues come up? How do you rate the support you get in your position? • How do you go about resolving issues with teachers, students or running the school? • What would you like to change? • What would you like to maintain? • What would you like to add?
<ul style="list-style-type: none"> • What technological tools are available to teachers? 	<p>ICT Questions:</p> <ul style="list-style-type: none"> • Do you own a mobile phone? • What type of phone do you have? • How do you feel about accessing teacher training

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	<p>materials using your mobile phone?</p> <ul style="list-style-type: none">• How do you feel about access teaching material using your mobile phone?• How do you feel about students utilizing mobile devices in education?• What concern do you have about utilizing mobile devices for educational purpose?• How much do you pay for usage?• Are you concern with the added cost?• Do you have access to the Internet?• Do you have access to computers at school?• How do you feel about using technology to teach?• How familiar are you with technology?• Are you willing to bet training if need be?• How do you think technology can be used to help your students?• How would you use (integrate) learning resources available online in your classroom?• What would you like to add?
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APPENDIX C Informed Consent Form

THIS DOCUMENT SHALL ONLY BE USED TO PROVIDE AUTHORIZATION FOR VOLUNTARY CONSENT

PROJECT TITLE: GENERATING EVIDENCE: THE EVALUATION OF THE TEACHER CONTINUOUS PROFESSION DEVELOPMENT FRAMEWORK, IN CASE OF ETHIOPIA
Project IRB Number: _____

I, Blene A Betemariam, am a doctoral student at Lynn University. I am studying Global Leadership, with a specialization in Education. One of my degree requirements is to conduct a research study.

DIRECTIONS FOR THE PARTICIPANT:

You are being asked to participate in my research study. Please read this carefully. This form provides you with information about the study. The Principal Investigator (Blene A Betemariam) will answer all your questions. Ask questions about anything you do not understand before deciding whether or not to participate. You are free to ask questions at any time before, during or after your participation in this study. Your participation is entirely voluntary, and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You acknowledge that you are at least 18 years of age and that you do not have medical problems or language or educational barriers that preclude the understanding of explanations contained in this authorization for voluntary consent.

PURPOSE OF THIS RESEARCH STUDY: The study is about developing evidence-based CPD program evaluation system to address concerns about the program's impact on the improvement of quality in teachers' performance. Evidence-based evaluation system helps teachers gauge their performance and track progression by providing a continuous feedback cycle. Such a system would present teachers supporting evidence to better understanding their current status relative to the expected outcome. The evaluation process additionally serves as a tool for decision-making purpose to monitor the program's validity and effectiveness in producing the intended outcomes. The study underscores the need to design the CPD program based on teachers' background information and training experiences to cover a wider range of deficiencies. The information gathered from teachers would serve as a guide for CPD program developers to accordingly correlate the training module. This system would provide a data source for future impact analysis studies. In addition, this research explores an application-based CPD toolkit design for teachers to allow customization of the CPD training program to specific needs. An application-based toolkit would present an alternative ground-up approach to involve teachers in their professional growth and development. The objective is to transform and remediate scenarios that impose difficulties to sustain a culture of continuous professional growth and development for teachers in Ethiopia. Approximately eighty teaching faculty and staff at Nazareth School are invited to participate in this study.

PROCEDURES: The researcher will distribute the survey questions either via email or fax to about eighty teaching faculty and staff at Nazareth School.

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- 1) Survey teachers at Nazareth School to identify the source of the problem for declining quality of education, teacher training requirements and professional development training.
- 2) Survey school administrators at Nazareth School to identify the source of the problem for declining quality of education, teacher training requirements and professional development training.
- 3) Research current educational outcomes concerning in-service teacher recruitment, training, and retention; recruitment and training; and continuous professional development (CPD) training programs in Ethiopia.
- 4) Analyze current technological policies concerning mobile phone regulation, internet regulation, and data storage.

Experimental

If a Survey (Self- Report)

You will first complete survey questions provided by the researcher. The survey consists of thirty questions that should take about ten to fifteen minutes to complete.

If using the Internet (email service): the researcher will provide the survey questionnaire in a blind copy format so that the list of participants will not appear in the header. **Report** method of protection of privacy of respondents includes document encryption and password protection.

POSSIBLE RISKS OR DISCOMFORT: This study involves minimal risk. You may find that some of the questions are sensitive in nature. In addition, participation in this study requires a minimal amount of your time and effort.

POSSIBLE BENEFITS: There may be no direct benefit to you in participating in this research. However, knowledge may be gained which may help establish a culture of continuous improvement and increased teachers' involvement in professional growth and development.

FINANCIAL CONSIDERATIONS: There is no financial compensation for your participation in this research. There are no costs to you as a result of your participation in this study.

CONFIDENTIALITY: The anonymity of participants is valued and respected. The researcher will provide a document encryption and password protection in a blind copy format to protect the privacy of participants. The researcher will convey the information obtained from participants' using a coding system and will maintain their privacy.

ANONYMITY

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Surveys are anonymous. The privacy setting for electronically mailed survey responds is set not to collect IP addresses or any other personal information to specifically comply with participant's anonymity. As a participant, you will not be identified, and data will be reported as "group" responses. Participation in this survey is voluntary, and the return of the completed survey will constitute your informed consent to participate.

If the Internet is used: Anonymity will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet to any third parties. The researchers will not identify you and data will be reported as "group responses. Participation in this survey is voluntary, and the return of the completed survey will constitute your informed consent to participate. All information will be held confidential and will not be disclosed unless required by law or regulation.

CONFIDENTIALITY

Every effort will be made to maintain confidentiality. Your identity in this study will be treated as confidential. Only the researcher (Blene A Betemariam) will know who you are. During the Interview, you will be given a code number. Data will be coded with that code number.

STUDY FINDINGS

The study outcomes will be communicated in the form of an exploratory research paper and present an application-based CPD toolkit, which allows customization of the CPD training process as an alternative option for teachers. Furthermore, a technology-based design will represent an integral process of an evidence-based evaluation system.

The results of this study may be published in a dissertation, scientific journals or presented at the professional meeting. Also, your privacy will be maintained in all publications or presentations resulting from this study.

All the data gathered during this study, which was previously described, will be kept strictly confidential by the researcher. Data will be password protected by the researcher and destroyed at the end of the research. All information will be held in strict confidence and will not be disclosed unless required by law or regulation.

RIGHT TO WITHDRAW: You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate.

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CONTACTS FOR QUESTIONS/ACCESS TO CONSENT FORM: Any further question you have about this study or your participation in it, either now or anytime in the future, will be answered by Blene A Betemariam (Principal Investigator) who may be reached at [REDACTED], [REDACTED] or [REDACTED] and Dr. Gleek faculty advisor who may be reached at [REDACTED], or [REDACTED]. For any questions regarding your rights as a research subject, you may call, Dr. Reich, Chair of the Lynn University Institutional Review Board for the Protection of Human Subjects, at [REDACTED], or [REDACTED]. If any problems arise as a result of your participation in this study, please call the Principal Investigator (Blene A Betemariam) and the faculty advisor (Dr. Gleek) immediately.

A copy of this consent form will be given to you.

AUTHORIZATION FOR VOLUNTARY CONSENT:

I have read and understood this consent form. I have been given the opportunity to ask the question, and all my questions have been answered to my satisfaction. I have been assured that any future questions that may arise will be answered. I understand that all aspects of this project will be carried out in the strictest of confidence, and in a manner in which my rights as a human subject are protected. I have been informed of the risks and benefits. I have been informed in advance as to what my task(s) will be and what procedures will be followed.

I voluntarily choose to participate. I know that I can withdraw this consent to participate at any time without penalty or prejudice. I understand that by signing this form, I have not waived any of my legal rights. I further understand that nothing in this consent form is intended to replace any applicable Federal, state or local laws. I understand that I will receive a copy of this form.

Participant's printed name

Participant's signature

Date

I consent to communicate via email or fax

Participant's signature

Date

INVESTIGATOR'S AFFIDAVIT: I hereby certify that a written explanation of the nature of the above project has been provided to the person participating in this project. A copy of the

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written documentation provided is attached hereto. By the person's consent to volunteer participate in this study, the person has represented that he/she is at least 18 years of age, and that he/she does not have a medical problem or language or education barrier that precludes his/her understanding of my explanation. Therefore, I hereby certify that to the best of my knowledge the person participating in this project understands clearly the nature, demands, benefits, and risks involved in his/her participation.

Approval: _____
Signature of Investigator

Date of IRB