



THE UNIVERSITY OF QUEENSLAND  
AUSTRALIA

**Improving Quality in Higher Education through Cooperative  
Learning Pedagogies: An Ethiopian Example**

*Tefera Tadesse Jimma*

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### Abstract

In recent years, researchers in higher education have been exerting considerable efforts to minimize the existing tension between external accountability and internally driven efforts to improve the quality. Part of the challenge is that a focus on accountability undermines the influence of context, the quality of measures, and the complexity of educational outcomes. Also, such a focus overlooks the insufficiency of current understandings about the factors associated with the quality. This doctoral dissertation uses both primary and secondary sources to explore the quality of teaching and learning in the Ethiopian higher education; and question whether or not quality improvement has received acceptance at the national and institutional levels, and whether or not, it has resulted in widespread qualitative change in classroom practice.

The study participants were predominantly from the College of Natural Sciences and the College of Social Sciences and Law at a large, public university. Design-based research portraying iterative cycles and incorporating a variety of research methods and approaches informed the research project. Also, a mixed methods approach that included analysis of questionnaire, qualitative interview, and focus group discussion was used. The iterative cycles started with a critical analysis of quality assurance as a policy domain. Followed by, an in-depth exploration of the quality of teaching and learning based on diverse stakeholders' perspectives. This is backed up with a quantitative study designed to examine the learning experience of the students across a range of dimensions using a survey largely adapted from the Australasian Survey of Student Engagement (AUSSE). Then, based on the patterns of the quality problems emerged and documented, the researcher conducted a series of cooperative learning (CL) pedagogic interventions, and assessed their implementation processes and the resulting outcomes.

Findings indicated that quality assurance does not seem to be able to provide institutions the best from which their classroom practices and students learning experience could get nurtured. Also, there are a number of quality gaps, more pronounced to aspects of implementation, engagement, and learning. Findings in one of the intervention studies showed that an inter-correlated four pedagogical variables significantly predicted scores on learning satisfaction and gains,  $.27 \leq \beta \leq .61$ , accounting for, 69% and 52% of the variance, respectively. Moreover, results in the other two subsequent studies revealed that students in the CL classroom condition scored significantly higher than did students in the traditional lecture classroom condition (Cohen's  $d = .21 - .42$ ). Also, participation in the CL significantly predicted scores on five of the six constructs differentially,  $.12 \leq \beta \leq .21$ ,

accounting for 1% to 5% of the variance. These results, in conjunction with, the corresponding benefits of CL reported in the qualitative data, appear to suggest that CL pedagogies substantially impacted classroom practices and engagement and learning in students. In tandem, results confirm that impacting on teaching appears to pertain also to learning.

Based on the findings, this doctoral thesis argues that a focus on quality assurance conceals more fundamental aspects of quality improvement. This doctoral thesis illuminates some light on the quality debate in higher education context, claiming a shift in focus from the macro, institutional aspects to the micro, individual aspects of the quality issues. Through shifting the analysis and concern of the quality from the macro level to the micro level, the key facets of effective educational practices, and the students learning experiences become more crucial, with a possibility of addressing the different facets of quality improvement in practice.

This doctoral dissertation is divided into a series of draft journal articles written to support one another for a powerful evidence-base regarding the quality in Ethiopian higher education academe, multi-validation of the quality measures, further expanding on the practical implications on the CL intervention processes and outcomes. Although each chapter is written as a self-contained, journal article standing independently, they collectively describe the building blocks of quality improvement in higher education classroom setting, its iterative cycles, and dynamic nature.

**Declaration by author**

This doctoral dissertation is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my dissertation.

I have clearly stated the contribution of others to my dissertation as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, and any other original research work used or reported in my thesis. The content of my dissertation is the result of work I have carried out since the commencement of my research higher degree candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my dissertation, if any, have been submitted to qualify for another award.

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**Publications during candidature****Book**

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Tefera Jimma (Candidate)	Designed experiments (60%) Wrote the paper (70%)
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**Keywords**

case study, classroom pedagogy, cooperative learning, Ethiopia, higher education, quality improvement, structural equation modelling

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**Abbreviations**

ADRC: Academic Development and Resource Centre  
APQA: Academic Program and Quality Assurance  
AUSSE: Australasian Student Engagement Survey  
BPR: Business Process Re-engineering  
BSC: Balanced Score Card  
CD: Coefficient of Determination  
CFA: Confirmatory Factor Analysis  
CFI: Confirmatory Fit Index  
CL: Cooperative Learning  
CGPA: Cumulative Grade Point Average  
EQE: Educational Quality Expert  
FGD: Focus Group Discussion  
GVB: Gender Based Violence  
MOE: Ministry of Education  
HE: Higher Education  
HERQA: Higher Education Relevance and Quality Agency  
HESC: Higher Education Strategic Centre  
KMO: Kaiser-Meyer-Olkin  
NSSE: National Survey of Student Engagement  
UQ: University of Queensland  
PCF: Principal Component Analysis  
RMSEA: Root Mean Squared Error of Approximation  
SRMR: Standard Root Mean  
SEM: Structural Equation Modeling  
S: Student  
SM: Senior Manger  
T: Teacher  
TLI: Tucker Lewis Index  
UNESCO: United Nations Education  
ZPD: Zone of Proximal Development

## Chapter One: Introduction

Higher education is currently undergoing intensive change and transformation worldwide. A manifestation of this phenomenon is the changed circumstance in access to higher education that traverses from worldwide constraints to common patterns of reform (Goastellec, 2008). One major reason for this rapid expansion is the shifting role of higher education from elite to mass higher education. At the same time, the value attached to attending higher education and its impacts on socio-economic status, human capital, and technical innovation is changing as well. As a result of this rapid expansion and shift in focus, the nature of students, academic staff, and the curriculum and assessment is changing within the higher education institutions.

Over the last two decades, higher education systems and institutions worldwide sought to promote new initiatives in improving quality. A significant feature of these has been the drive to establish a culture of evidence of effectiveness and efficiency (Doyle, 2006; Guthrie & Neumann, 2007). *Quality assurance* has emerged as one of the most significant supra-national management tools, impacting upon the higher education system of every continent (Ewell, 2010; Harvey & Newton, 2007). The main thrust of this agenda is to ensure the provision of quality education based on minimum set criteria and standards, simultaneously, improving quality (Harvey & Newton, 2004).

Simply stated, quality assurance is a means of ensuring that provision is at or beyond a satisfactory level of quality (Tam, 2001). Thus, the concern is to provide evidence of conformance to processes and procedures (Ewell, 2007). In a broader perspective, quality assurance is aimed at coordinating higher education systems through allowing student mobility, cross-border recognition of qualifications, and better quality graduates (Westerheijden, 2007). These promises seem likely to have a profound effect on the development of higher education worldwide, as other continents are taking a close interest and considering how their own systems can be more closely aligned with the quality assurance scheme (Taousanidis & Antoniadou, 2010).

Despite a growing interest in raising the standards of higher education, and continually improving quality via quality assurance, little has been attained, mainly due to a lack of focus on students learning and how to improve (Harvey, 2005; Hodson & Thomas, 2003; Trowler, Fanghanel, & Wareham, 2005; Westerheijden,

Hulpiau, & Waeytens, 2007). The other reality is that quality assurance systems establish externally imposed definitions of quality (McKay & Kember, 1999). Houdson (2008) noted that “improvement potentially depends on the development of definitions and interventions that reflect the interests and concerns of those in the sector” (p. 61). Moreover, achieving quality teaching and learning requires paying attention to good educational practices or processes than structural and institutional factors (Pascarella, 2001).

It is argued that the broader conception of quality improvement needs to encompass the transformation of the overall academic culture. This is because efforts to improve quality most likely weaken when an institution pays little attention to understand the institutional culture that reinforces the status quo and perpetuates everyday common actions (Brint, Cantwell, & Hanneman, 2008). Similarly, with a growing concern for students’ success, higher education institutions are under a constant pressure to find strategies that captures diversity and meet the needs of all students (Haggis, 2006; Major, 2009). However, system level changes are significant to respond, their contribution will be much higher when they are seamlessly integrated with the underlying institutional conditions and the learning environment (Rosa, Sarrico, & Amaral, 2012).

Moreover, a special concern for externally imposed standards and procedures and the overall assessment oriented culture has led to a failure to bring lasting improvement (Harvey, 2008; Harvey & Newton, 2004; Lomas, 2004). Research shows that quality assurance mechanisms have failed to bring practical improvement (Gosling & D’Andrea, 2005; Harvey & Williams, 2010), particularly, the value-added for assurance practice is minimal (Lomas, 2004). Mainly because such a practice did not concern with the complexity of a whole teaching programme, or issues such as leadership or the academic culture (Horsburgh, 1999). It is also questionable whether these indicators provide relevant information about the quality of teaching and learning prevailing in the higher education classrooms (Harvey, 2006; Tam, 2002).

Quality assurance compares institutional performance across a range of externally imposed quantitative indicators. These indicators are statements, usually quantified, on institutional resources and accomplishments secured in areas of teaching and research (Ewell, 2007). Thus, in effect, they are input and output indicators. Such input and output indicators do not and cannot comment on the

quality of the student experience in higher education (Harvey, 2006). If higher education is seen as a developmental process of increasing the intellectual maturity and personal growth of students, it is difficult to see how quantitative indicators of these sorts alone can be of any help (Tam, 2001). In a holistic sense, the notion that institutions of higher education are founded on processes of promoting growth and development of students is overarching as it encompasses intellectual, social, emotional and cultural development.

It is true that trying to impose or prescribe quality does not improve quality (Doherty, 2008). Instead this may lead the main actors to frustration and resistance and even further ruin a sense of ownership to maintain and sustain quality (Borden, 2010). From the practical point of view, the solution is examining the undergraduate experience for a better understanding of variables that contribute to increased student engagement and learning (Kuh, Kinzie, Schuh, & Whitt, 2005). Doing so results in broader conceptualizations that lead to better knowledge of how students learn, understanding barriers to students learning, and developing pedagogic strategies that promote learning among students (George & Paul, 2005; Haggis, 2006).

A more informative approach may be to assess the practices and processes within a university to see how they correlate with important cognitive and non-cognitive outcomes, such as subject matter knowledge and interpersonal relationship, respectively (Kuh, 2001; Pascarella, 2001). This approach is distinctive as it aims to transform quality by focusing on those institutional practices that have been shown to influence learning outcomes in carefully controlled studies (Koljatic & Kuh, 2001). The assumption is that: an excellent undergraduate education is most likely to occur at those colleges and universities that maximize good practices and enhance students' engagement (Astin, 1999; Kuh, 2001).

Against these backdrops, student engagement has become a key term in a considerable number of higher education studies, particularly in those related to teaching and learning. Student engagement is conceptualized as denoting the extent to which students are actively involved in a variety of purposeful educational activities that promote high quality learning and personal development (Coates, 2005; Kuh, 2001). This notion considers both students' time and energy and institutional conditions as significant influences on students' learning and development (Astin, 1999).

To help undergraduate students engage in educationally purposeful activities, a paradigm shift from less engaging and/or passive learning to a more engaging and active learning is required (Biggs, 2001; Bryson & Hand, 2007). The core issue is to move students learning experience in a more meaningful way that promote participation and cooperation among students (Johnson & Johnson, 2009; Johnson, Johnson, & Smith, 2007). Instruction that involves students as active learners, rather than as passive recipients of knowledge, is likely to show respect for students' views and experiences (Jones & Thomas, 2005). Research shows that different higher learning institutions successfully achieved this quality land mark through different evidence-based strategies and context-responsive practices (Kuh, et al., 2005). Of the various strategies suggested in the literature on higher education, the major ones include: community of inquiry (Hennessey & Evans, 2006), cooperative learning (Johnson & Johnson, 2002), learning-oriented assessment (Hernández, 2008), Problem-based learning (Biggs, 2001); and service learning (Smith, Sheppard, Johnson, & Johnson, 2005).

Active learning is the most commonly used term to represent those pedagogical constructs that promote student engagement and learning (Drew & Mackie, 2011). Warren's (2003) meta-analysis of active learning methods pointed out that discussion and group-based learning activities promote enhanced student participation and interaction; more willingness to express ideas; improved communication among students in culturally diverse classes; and increased motivation, quality of discussion and level of analysis. Seen in this light, the classroom has to play a more central role in the current quality improvement efforts.

**Ethiopia: composition and location.** Ethiopia is an independent country, which is located in the horn of Africa. It is bordered by Eritrea to the north and northeast, Djibouti and Somalia to the east, Kenya to the south, and Sudan and South Sudan to the west. It is one of the most populous countries with a population of 85.8 million (Ethio-Censuse, 2007). Ethiopia is a land of nations with more than 85 ethnic compositions, and 5 major religious groups, that is, Orthodox Christian, Muslim, Protestant, Catholic, other traditional believers. It has the area location of 1,100,000 km<sup>2</sup>. The topography is characterized by tropical highlands, in most parts, including the capital, Addis Ababa, which is located between 2000-3000 above sea levels. Figure 1 presents the map of Ethiopia.

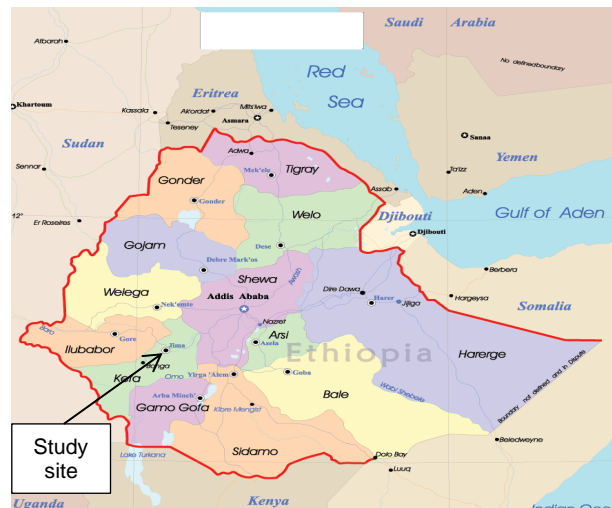


Figure 1. The Map of Ethiopia

**The education system in Ethiopia.** It is important to outline briefly the general features of the Ethiopian higher education system. The school education system in Ethiopia is composed of eight years of primary schooling, which is divided into lower primary (1-4) and upper primary (5-8); two years of high school (9-10); and two years of preparatory school (11-12) (Federal Democratic Republic of Ethiopia, 1994). Hence the education system is organized into an 8-2-2 structure of schooling. In addition to this, post-secondary colleges are organized at a regional level to offer 2 year academic programs in various disciplines. The public universities are organized and funded by the Federal government and offer undergraduate programs spanning 3-5 years (Wondimu, 2003).

## 1.2. The study Questions and Purposes

The main focus of this doctoral dissertation is to test and validate a quality improvement process integrating categories of quality review with developmental stages of CL interventions, further expanding on the practical implications of the processes and outcomes of the interventions. Through these, it examines the theoretical foundations and empirical evidence on what constitutes quality teaching and learning in the Ethiopian higher education. More specifically, this study attempts to respond the following research questions.

1. What is the state of quality in the Ethiopian Higher Education institutions in terms of students' educational experience, policy and practice?
2. What levels of student engagement are observable across the studied colleges?

3. What are the major factors affecting the quality of teaching and learning in the universities in Ethiopia?
4. How does modification to the classroom instruction using cooperative learning pedagogic intervention improve the quality of teaching and learning?
5. What are the challenges and best practices that can be drawn from the implementation of cooperative learning pedagogic intervention in the Ethiopian Higher education classrooms?

The specific objectives of the present study included the following.

1. To review institutional policies and practices of the Ethiopian higher education system using quality analysis frameworks and research-based measures.
2. To analyse cross college, year and gender differences in terms of quality in light of student engagement.
3. To generate comprehensive data about the institutional factors affecting student engagement in the Ethiopian higher education based on different stakeholders perspectives.
4. To practically demonstrate the design, implementation, and evaluation of CL pedagogic interventions to improve the quality of teaching and learning in the actual classrooms in an Ethiopian university setting.
5. To disseminate the intervention effects, best practices and lessons learnt from the study process of systematic design, implementation, and evaluation.

### **1.3. Overview of Parts of the Dissertation**

This dissertation is written using the format of dissertation by publication so that the chapters consisting of a series of studies are written as separate journal articles. While the entire dissertation is guided primarily by a social constructivism paradigm and sociocultural theories of learning, other related paradigms and theories that are relevant to the writing of each separate journal articles are considered to provide more comprehensive platforms for the investigations. The body of works in the different journal articles explored more broadly and in greater details the quality of undergraduate education, and the design, implementation, and evaluation of CL pedagogic interventions at the actual classrooms in Ethiopia.

This dissertation utilized a case study methodology comprising several quantitative and qualitative data sources at the different phases of the project.

Through the analyses of such comprehensive data, it reveals the macro perspectives and the prevailing micro realities of quality teaching and learning in the Ethiopian higher education. Also, it generates a blend of empirical research evidence with the design, implementation and evaluation of CL classroom condition.

This dissertation is organized into nine separate chapters. It starts with a general introduction to the body of works included in the different journal articles, a brief overview of each chapter, and a conceptual model illustrating the general scheme of the research trajectories. This is followed by reviewed literatures as bases, followed by a series of six journal articles written as separate chapters. This doctoral dissertation ends with a final chapter devoted for discussing the major findings of the journal articles, drawing conclusions, and highlighting implications or recommendations of the findings. Here a brief overview of each chapter will be presented.

*Chapter 1.* This chapter provides a general overview of the study. It describes the background taking both the global perspective and local realities. This chapter mainly focuses on providing the arguments and the main issues to be addressed with this doctoral dissertation.

*Chapter 2.* This is predominantly about the review of the relevant literature in the areas of quality higher education, classroom practices, student engagement, and CL pedagogies. Detail analyses on these major issues form the fundamental pillars of this doctoral research, and guides individual studies, the design of interventions, and the development of engagement and learning in students. While detail arguments and discussion can be found in each study parts, this chapter presents the fundamental theoretical assumptions and conceptualizations.

*Chapter 3.* This chapter is used to create a sense of conceptualization of what constitutes quality in light of the global perspectives and intellectual discourses surround teaching and learning in higher education. To this effect, this chapter comprises a critical analysis of quality assurance and its effects more generally. Here the main focus is to examine the Ethiopian higher education quality assurance viewing through a quality assurance policy analysis framework and a conceptual lens identified from the literature.

*Chapter 4.* This chapter as a continuation of chapter 3, attempts to further examine stakeholders' perspectives on quality teaching and learning. Thus, the emphasis is on the stakeholders' views and commentaries to capture their



perceptions about the quality of teaching and learning, and understand the academic practices, and further expand that with the different dimensions of quality. It tries to provide in-depth empirical evidence to get a sense of the existing realities that could help to track earlier accomplishments regarding quality teaching and learning. Moreover, it helped to understand the opportunities and challenges in the higher education system and drew tentative emerging intervention themes through the process to shape up future interventions.

*Chapter 5.* This chapter explores the quality of teaching and learning further in the quantitative data by examining the learning experience of the students using a standardized engagement scale. It also serves to cross validate the qualitative findings sought in the previous chapters. The evidence from this chapter could help to find supporting quantitative evidence in further preparation to alleviate some problems of quality and prepare the platform for instructional reform.

*Chapter 6.* This chapter reports on a pilot project that examines how a CL intervention becomes implemented in two selected classrooms. It also reports on the feasibility of research tools and procedures in preparation to the actual intervention. This could help to concretize the anticipated tentative emerging themes for the interventions. On balance, this chapter presents both quantitative and qualitative data to demonstrate evidence of improved teaching and learning as a result of participation in CL lessons.

*Chapter 7.* This chapter reports on the design, implementation, and evaluation of informal CL intervention in the actual classrooms. The principal focus is to provide empirical evidence that examines how informal CL pedagogic interventions become implemented across undergraduate courses. Through analysing and interpreting both quantitative and qualitative evidence, this chapter presents evidence about the potentials of cross-fertilization among three interrelated intervention approaches, namely design research, CL pedagogies, and practice-based staff development.

*Chapter 8.* This chapter reports on a study that examines the instructional practices of four undergraduate teachers that involve formal CL pedagogies in the actual classrooms. As a continuation of the previous intervention study, the four teachers and the same students groups were involved. In this study, three different formal CL pedagogies and inter-group peer assessment strategies were applied. This chapter provides both quantitative and qualitative evidence illustrating how the

proposed formal CL was contextualized to meet local needs. It also examines the cultural context that surrounded the implementation of the formal CL lessons.

*Chapter 9.* This part of the dissertation reports on the significance of the research project, in particular, on the main findings drawn from the journal articles reported in the preceding chapters. Here the key element is interpreting the findings based on some selected concepts and indicating the validity and practical relevance of the evidence. Interpretations were made in broader perspectives, including higher education system of the country, and other similar contexts in sub-Saharan Africa, and higher education systems more globally. Moreover, this part could help to give meaning to the findings of this study by interpreting their potential contributions from different stakeholders' perspectives, and educational theories and principles. Also, by discussing the research-paradigm and interpreting the practicality and relevance, further quality improvement can be attained, and more contextualized frameworks, models and guidelines for further studies can be highlighted. Finally, the conclusions drawn would help to generate several recommendations for a better educational change management and continual improvement of quality teaching and learning in Ethiopian higher education context.

Each individual study relates with the overall structure of the dissertation. For example, research question 1 aligns with objective 1, chapter 3, chapter 4, and chapter 5. Also, research question 2 aligns with objective 3, chapter 4, and Chapter 5. Similarly, research question 3 aligns with objective 3, chapter 4, and chapter 5. Both research question 4 and research question 5 align with objective 4, chapter 6, chapter 7, and chapter 8.

#### **1.4. Description of the Intervention Programs and Services**

Cooperative learning is one of the most widely used pedagogic strategies that have the potential to be inspiring, impactful and transformative. In its most basic form, CL is an experiential education practice in which learners engage in a curriculum while also developing social functioning skills within a related area of need. Learners engage in learning and development as a key tool to help link their learning experience to the content of the curriculum. In best practice CL, the learning experience via structured classroom condition is a catalyst for helping learners explore the underlying issues that create or maintain the need for the service, adding practicality and depth to the accompanying curriculum.

For the intervention studies reported in chapter 7 and 8, the researcher purposively selected teacher participants considering maximum variation across gender and department. The key criterion for selection of teacher participants was teaching proficiency and confidence in using innovative pedagogy in classroom teaching. Also important was teacher's assignment to teach two classes of students registered for a major course. Department heads thus played an important role in the recommendation of teacher participants. After that, the researcher placed all students of one class of each course in the intervention group while assigning the students in the other class of each course to the comparison group. This gives control over random assignment rather than random selection (Creswell, 2012), testifying randomly assigning student participants, so that controlling for extraneous variables that might influence the relationship between the new practices of CL and the criterion outcome (e.g., student satisfaction). Moreover, the same participants (teachers & students) involved in the intervention studies reported in chapter 7 and 8 reducing substantial problems of alignment, coordination, and analysis.

The distinctive feature of the CL interventions included in chapter 6, 7, and 8 is the introduction of two types of CL approaches in a sequential and incremental way. The logic of presenting the informal CL approach followed by a formal CL approach grows out of the uniqueness of each approach and the amount of skill development needed for each for successful implementation. From the researcher experience, the informal CL approach is relatively easier to implement due to technical simplicity, while the formal CL requires more planning and higher levels of critical thinking in order to apply the approach in a teaching situation. By matching the CL approaches on the basis of skill development needed to effectively use each model, the intervention studies take advantages of the natural development of the intervention teacher participants and their students. Similar to the progression where teacher participants advanced sequentially and incrementally in their developing and teaching lessons, the intervention studies provide students lived experiences that increase in complexity and skill requirements through the intervention process.

The CL activities were gradually increased in intensity from approximately a 20 - 30% inclusion per single lecture class period to a 50 - 70% inclusion of *small* group activities for double periods. The on-site support offered several professional advices for teachers regarding how to manage the CL activities. Supervised CL activities provided for the students social and developmental opportunities to engage

more during CL lessons, at the same time, offering opportunities to develop learning and social skills. Students also had the opportunity to feel connected with teachers, ask questions, and spend time with their *small* group members throughout the period, and the teachers were active in giving frequent feedback and coaching when needed.

### **1.5. Themes and Purposes**

This doctoral dissertation has multiple purposes. The first purpose is to examine the extent of quality teaching and learning in the undergraduate programs in a university in Ethiopia. Here the focus is to identify personal, instructional, and course related factors. The other focus is a broader exploration of the associated institutional and systemic factors. Further, it investigates the developmental processes and outcomes of participation in the CL interventions.

In the qualitative data analysis of the different chapters reported in this doctoral dissertation, the categories evolve from the meanings. By way of saying category it is meant that of discerning similarities in the qualitative data (Glaser & Strauss, 1967). An interpretivist process has been applied to develop the categories, during which the researcher is trying to respect the data and use category labels close to the original language of participants. Thus, the researcher tends to rely upon the participants' views of the situation being studied and throughout the research process the researcher inductively develop patterns of meanings (Creswell, 2012). Ideas for categories also come in part from the researcher's knowledge of previous theorising and findings in other studies. Thus categories were formed through an interactive process in which priority is given to the data but understanding is inevitably facilitated by previous understanding about the phenomenon based on personal views, comparisons with past studies, or both.

The interpretivist nature of the qualitative studies means that the researcher is bounded up in the studied situation, instead of being a detached, objective observer, reflecting the notion that knowledge is constructed by the individual through the process of social negotiation (Guba & Lincoln, 1989). In the final analysis, the most salient themes emerge when all these perspectives are harmoniously synthesized (Creswell, 2007). This proved important in ensuring that the assumptions made were not exclusively the result of the researcher's subjective interpretation, but also grounded on actual data and reviewed literature (Charmaz, 2006).

### **1.6. The Design-Based Research Approach**

The individual studies, reported from chapter 3 to 8, were organized by a more carefully orchestrated design-based research approach that represents a set of related research approaches, including design studies (Edelson, 2002); design experiments (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003); and development research (van den Akker, 2003). As a result, both design and research occurred in a real life complex setting (Collins, 1999; Gillies, 2009; Sandoval & Bell, 2004).

In light of the design-based approach, this doctoral dissertation applied iterative cycles of six studies of a quality improvement project. The iterative cycle starts with inexpensive study, as reported in chapter 3, with the researcher engaging in a critical analysis of higher education quality assurance based on a framework and a conceptual lens. The main intent of such a study is to examine higher education quality assurance from an academic perspective and give a general idea of the most promising approaches to the questions of quality improvement (Barab & Squire, 2004). This is because “designers can truly define the problem only in light of the solution. The solution informs them as to what the real problem is” (Banathy, 1996, p. 20). That is why the first study, reported in chapter 3, emphasized on finding and creating solutions instead of focusing on retrospective problem diagnosis. This assists in the production of initial draft ideas to be used as platform for the interventions in chapter 6, 7, and 8.

The next qualitative investigation, chapter 4, used to further explore quality teaching and learning more in-depth taking the perspectives of four different stakeholders’ (students, teachers, senior managers, and education quality experts). In a similar vein, the quantitative survey reported in chapter 5 broaden the problem analyses through inclusion of a large number of student participants ( $N = 536$ ) and switching the methods of data collection to a quantitative survey. At the core of this survey is student engagement as mainly adopted from Australasian Survey of Student Engagement (AUSSE). Through these three studies (chapter 3, 4, and 5), the issue of quality teaching and learning under investigation is explored in an organic way by the researcher, practitioners and other stakeholders whose experience and knowledge help in the design-research initiative. In other words, the problem of quality teaching and learning has been explored intensively, not solely from an academic perspective, but from the perspective of the people who deal with the problem on a day-to-day basis.

The pilot intervention reported in chapter 6 is an initial intervention using a CL framework. Also, the two studies reported in chapter 5 and 6 served as useful avenues to test the validity and practicability of the methods and research tools, at the same time, providing evidence of effective improvement of the quality and potential challenges encountered. The last two studies (chapter 7 & 8) involve the main interventions as applied across four major courses of four departments that are different from the departments involved in the pilot study. Also presented is the testing of model adequacies using *SEM*.

As design experiment, the intervention studies (chapter 6, 7, & 8) did not anticipate replicating instructional intervention by ensuring that they are realized in precisely the same way in different classrooms. Instead, these design experiments aimed at ecological validity, that is to say, the description of the results provide a basis for adaptation to other situations (Brown, 1992). Thus, these studies characterize design causality to produce knowledge that is both actionable and open to validation. The process-oriented nature of design experiment (Edelson, 2002) provides special opportunity to include implementation evaluation as a useful complement to the design experiment. Through the implementation evaluation, the intervention design experiments presented in chapter 6, 7, & 8 provide qualitative data set for looking carefully at how a design concept is played out in the actual practice, and how social and contextual variables interact with the pedagogic variables.

### **1.7. Conceptual Study Model**

The conceptual model reported here guides the research activities by presenting a visual representation of the theoretical constructs (and variables) of interest, in relation to, the quality improvement. This model is developed based on the literature on student engagement and CL. The major focus, in this model, is to illuminate how the different components of quality improvement are integrated, and reveal the process across the stages of reviewing quality, to intervening through CL, and evaluation of the processes and outcomes of the interventions.

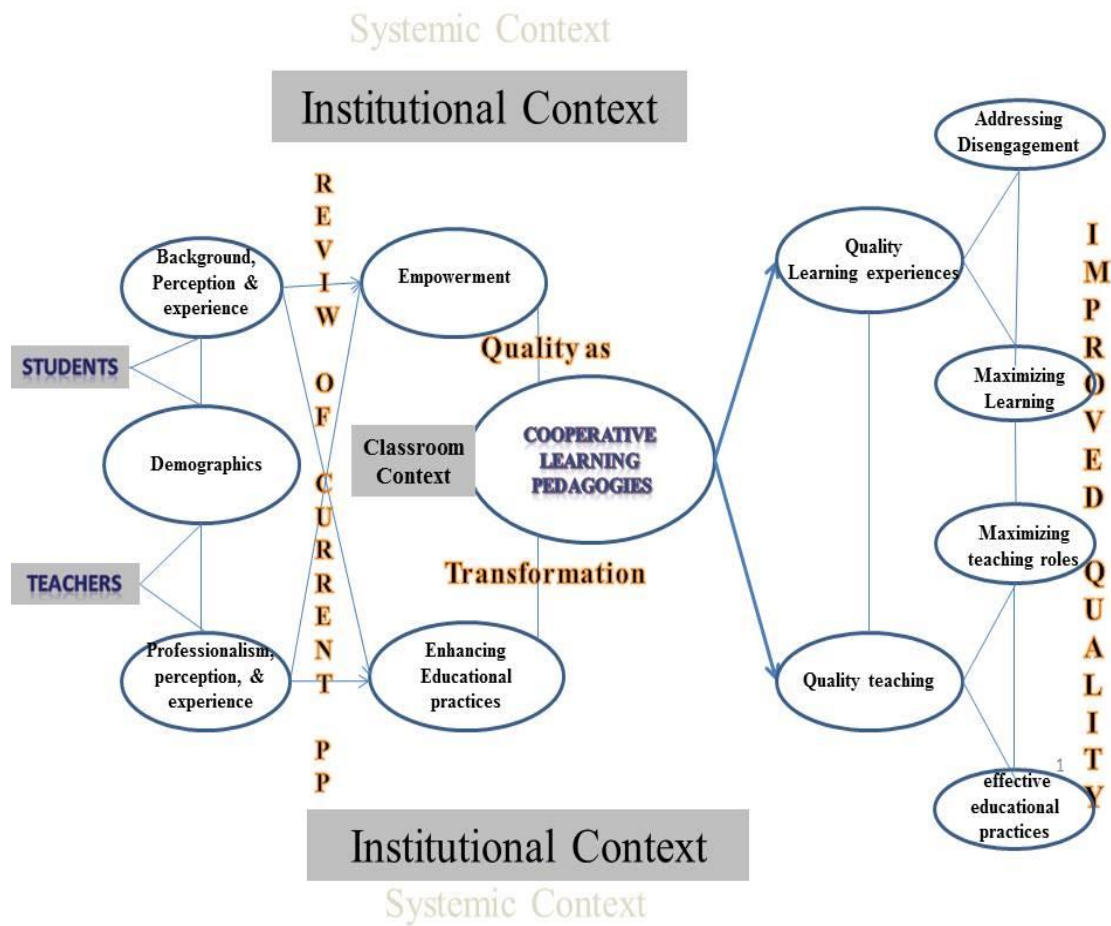


Figure 2. Conceptual model of the study.

It is clear from Figure 2 that the entire effort is geared towards improving quality through exploration of the existing policies and practices and implementation of CL pedagogic interventions. In this proposed model, CL pedagogies are assumed to play key roles in improving the teachers’ pedagogic practices, and thereby the students learning experiences. This doctoral dissertation involved empowerment of participants and a plan to enhance educational practice and the learning environment. Hence, a staff development package, comprising a training workshop, followed by site-based supervision and support was arranged. Simultaneously, students received a similar training workshop on CL skills, including adequate orientations and frequent support and feedback during the process of implementing the interventions.

## **Chapter Two: Literature Review**

### **2.1. Overview**

Before presenting the contents of this chapter, it is important to describe that the journal article format used for the other chapters has resulted in a concise literature review. In order to situate this study in the literature on the field of quality higher education, it is necessary to investigate five major, interrelated topics. Firstly, the review starts by analysing sociocultural theory as a major framework, providing an overview of sociocultural theory and its implications for the development of pedagogy and research in classroom teaching and learning. Secondly, it describes quality teaching and learning in higher education, considering the diverse meanings of the term, and the contemporary advancements attained over time. Thirdly, student engagement, as a fundamental aspect of quality teaching and learning in higher education will be discussed, along with, methodological issues on how it can be assessed. Fourthly, effective pedagogies that promote students engagement and their practical implementation will be reviewed. Finally, drawing from the literature review on effective pedagogies that can enhance student engagement, the notion of social interdependence and cooperative learning will be widely explored.

### **2.2. Historical and Epistemological Accounts of Social Constructivism**

There are two main views of teaching in higher education, these are, traditional view and constructivist view. In the traditional view of teaching and learning, the student groups are mostly passive in the classroom mainly involved in copying down notes and remembering what is said. The recent paradigm to teaching and learning is termed as constructivism. According to this view, teaching is characterized by learning facilitation, and learning is regarded as a complex process of constructing knowledge through active process of creating and modifying knowledge (Kember & Gow, 1994). For the students this means having to change from passive receivers to active constructors of knowledge. In the constructivist classrooms, students often experiment, observe, question, and interpret the world around them while continuously constructing and modifying their understanding of the world. There are two types of constructivism: cognitive constructivism and social constructivism.



Cognitive constructivism is based on Piaget theory of constructivism (Piaget, 1964). This theory states that children must construct an understanding of the world themselves through the interaction between their experiences and their ideas (Wertsch & Tulviste, 1992). According to Piaget, there are 4 stages of development ranging from birth to age 16. These stages (Sensorimotor, Preoperational, Concrete Operational & Formal Operational) form the basis of knowledge. His theory also asserts that new knowledge is formed through the process of accommodation, assimilation, and equilibration (Piaget, 1978). In a sense, while assimilation is where individuals incorporate new experiences into pre-existing intellectual framework of thinking, accommodations is where individuals learn through altering their thinking to accommodate modification.

The Russian psychologist, Lev Vygotsky extended this theory and established the theories of social constructivism. The theories of social constructivism describe learning as environmentally and culturally situated activity (Vygotsky, 1978), which requires mainly social participation (Lave & Wenger, 1991). The learning of a student with other learners, which testifies to social participation, is influenced by outside forces such as other people and cultures, as well as, their own experiences (Vygotsky, 1978). The same author further noted that these forces are central in the development of knowledge, that more knowledgeable others, such as teachers and peers, provide opportunities for the individual to learn within his/her growth spurt. The best way of describing this growth spurt is through the notion of the zone of proximal development (ZPD), which is defined as the difference between a student's ability to perform a task with the help of knowledgeable others and the ability to perform that same task independently.

Teachers have the professional responsibilities to ensure that they are teaching their class with these sociocultural theories in mind, and one way to do this is to incorporate certain cooperative learning pedagogies into the classroom practices. Cooperative learning (CL) pedagogies, through the fundamental principles of individual accountability and social interdependence, allow students to learn in new and exciting ways (Gillies, 2007; Johnson & Johnson, 2009). Unlike the traditional classroom practice, when a teacher single-handedly lectures, CL provides broader opportunities to facilitate students' engagement in a more equitable way and the attainment of multiple learning outcomes (Cohen, Lotan, Scarloss, & Arellano, 1999; Sharan, 2010a; Smith, 2006).

Social constructivism shows that a student learns best through experiences and conversations (John-Steiner & Mahn, 1996), and it is believed that CL can assist in providing and improving these experiences (Gillies, 2004). For example, through small group work in the classroom using the think-pair-share exercise that requires an individual quick thinking activity followed by a pair discussion for sharing ideas and thoughts, a line of communication between a student and the more knowledgeable other (peers) can be established (Gillies, 2003). Also, the use of jigsaw or group investigation in the classroom provides another option for students allowing them to work as experts and listen to one another, thus providing direct communication not only with the knowledgeable other (peers), but also their teacher (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; Cohen, 1994b). Another example is the use of group investigation and peer assessment and evaluation using scoring rubrics in the classroom (Cohen, 1994a). Applications of higher-order thinking provide students with opportunities to perform a task and learn from any mistakes they may make. For example, through a jigsaw strategy, application exercises can be given to students so that creating possibilities to test students' knowledge, and through supervised practice and formative feedbacks, students can then accommodate modifications and learn from the process.

In a traditional classroom setting, the teacher may ask the class a question and one student will answer. While that student may benefit from that mistake, other students may not benefit as much. However through a cooperative learning condition, applications of individual accountability and social interdependence allow all students to make mistakes and learn from them (Gillies, 2007), which according to Piaget's theory, is important to the learning process (Wertsch & Tulviste, 1992).

While the use of cooperative learning is pivotal in applying the notion of social constructivism, it certainly aids the teacher in providing effective and engaging lessons (Gillies, 2006; Webb, 2008). At the same time, CL can provide the student better access to more knowledgeable others (peers and the teacher) and can provide a broad range of activities to actively engage students (Smith, et al., 2005). There is a universal consensus among educators that a focus on the sociocultural theories greatly benefits both teachers and students. It is for this reason that this study mainly uses these sociocultural theories as basis for defining, implementing and evaluating quality in the Ethiopian higher education context. In the next subsequent sections, the basic essence of sociocultural theories as basis for

informing research and classroom practices will be described and the cooperative learning pedagogies as one potential learner-centered approach to promote students engagement will be highlighted.

### **2.3. Sociocultural Theories**

**2.3.1. Basic concepts of sociocultural theories.** Sociocultural theory is one of the theories of human learning that emphasizes the role of social interaction in cognitive development. This theory is based on the pragmatism of Dewey and Marxian ideology. Current conceptualizations of sociocultural theory draw heavily on the work of Lev Vygotsky. Here the basic framework of sociocultural theory, sociocultural explanations of teaching and learning, and the implications of sociocultural theory for pedagogy and research will be highlighted.

Sociocultural theory has different principles that can be systematically categorized into three major themes, namely: social interaction, internalization and the Zone of Proximal Development (ZPD). Vygotsky (1978) described learning as embedded within social events and occurs when a child interacts with the environment. According to sociocultural theory, sociocultural forces are important in shaping the situation of a child's learning and development (Packer & Goicoechea, 2000). These sociocultural forces include: social participation, relationships, the setting of activities, and historical change (Sfard, 1998) and are considered central to the transformation of a person and his/her contextualized social world (Brown, Collins, & Duguid, 1989).

From the sociocultural perspective, mediation is a key to learning and development and depends on the presence of mediating agents in the learner's interaction with the environment (Packer & Goicoechea, 2000). Mediation can be of two types: mediation through another human being in the form of scaffolding, coaching, and guiding and symbolic mediation in a form of organized learning activity such as physical and semiotic tools (Vygotsky, 1978).

Internalization is conceptualized as a process that occurs simultaneously in social practice and in the human mind (John-Steiner & Mahn, 1996). As Vygotsky (1978) stated, any function in the child's cultural development appears twice, on two planes: first on the social plane (inter-psychological), and then on the psychological plane (intra-psychological). This internalization, which is both sociocultural process and individual functioning, transforms the process of learning and development and

changes its structure and functions (Penuel & Wertsch, 1995). A continuous interplay of socially shared activities into internalized processes involves, among others, construction, transaction, and transformation.

Vygotsky (1978) defines the concept, Zone of Proximal Development (ZPD), as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). The notion of ZPD reveals two fundamental things. One is a pattern of developmental change, in which a phase of adult support precedes a phase of independent accomplishment (Adamson & Chance, 1998). The other is that adults and/or more advanced peers directly or indirectly have a positive influence on the child learning and development (Jaramillo, 1996).

**2.3.2. Sociocultural theory of teaching and learning.** Sociocultural theory maintains that learning occurs when a student interacts with the external environment (John-Steiner & Mahn, 1996). For example, in the classroom setting, to learn concepts, students must experience them and socially negotiate their meaning with their peers and/or teachers in the context of a complex learning environment (Jaramillo, 1996). This is because in the views of sociocultural theory, learning is a social participation (Lave & Wenger, 1991) and the product of guided participation by a teacher, adult or more advanced peer (Rogoff, 1991). The learning of the student is environmentally and culturally situated and providing the appropriate assistance when a student is at the ZPD for a particular task, (e.g., scaffolding) will provide opportunities for the student to achieve the task (Vygotsky, 1978). This will transform the learner’s emerging behaviour into a social act (Adamson & Chance, 1998).

Sociocultural theory assumes that teaching and learning can be viewed as a form of socialization (Lave & Wenger, 1991; Rogoff, 1991). This assumption implies that instruction is inherently social as well as cognitive (Wenger, McDormott, & Snyder, 2002). Hence in order to understand the individual, one must first understand the social context in which the individual exists (Wertsch, 1985) because learning is both individual and sociocultural (Renshaw, 2003).

**2.3.3. Implications of sociocultural theory for pedagogy and research.** The key feature of sociocultural theory is that higher order functions such as learning develop out of social interaction (Tharp & Gallimore, 1988) with a process of support by adults or more knowledgeable peers preceding independent performance

(Renshaw, 2003). One of the implications of sociocultural theory is that the learning and development of an individual can be understood only by examining the social and cultural processes from which it derives (Wertsch & Tulviste, 1992) because human learning and development have a social origin (Vygotsky, 1979).

Hence a holistic view is important to understand not just individual but also social and cultural dimensions of the learning situation. This prompts the researcher to begin the analysis of learning by going outside the individual (Wertsch & Tulviste, 1992). Indeed, a clear explanation of the complex nature of human learning and development can be obtained through collecting evidence beyond the individual as learning is contextual so that tracing into the origin of learning and development both from the sociocultural and historical perspectives of human existence (Luria, 1981).

From the above points of discussion it is clear that a sociocultural theory is valuable for educators because it emphasizes the role teachers, peers, and the society play in the student's learning and development. In this study, sociocultural theory served as a focusing lens that guides the study process in defining concepts of quality and associated components, reviewing and improving quality, and in selecting a suitable research methodology.

#### **2.4. Quality in the Higher Education: The Global Experience**

Is the quality of an educational program or institution to be found in its reputation or in its results, in rigor of process or in proof of outcome? Is the purpose of quality assurance systems to encourage educational improvement or to demonstrate accountability and stewardship of resources? How can a society honour its egalitarian motives, with an accent on opportunity, while simultaneously honouring its commitment to excellence, with an accent on high standards? (Bogue, 1998, p. 7)

The above quotation best describes the contentious nature of quality and how it is under the tension of rival influences. There are different ways of approaching quality in higher education. For example, the most authoritative figures in the field of higher education quality, Harvey and Green (1993) classified five different understandings of the term including exceptional, perfection or consistency, fitness for purpose, value for money, and transformation. Each definition has its own distinctive feature that makes it different from the others. For example, 'fitness for purpose' takes account of contextual differences, hence responsive to the local demands. Whilst there is an output-oriented view where quality is seen in terms of value for money,

consumer satisfaction or zero errors, there is a process-oriented view where quality is seen as transformative (Stensaker, 2007). Also research shows that the different stakeholder groups such as students, teachers, education bureaucrats and the quality assessors and governments have differing conceptualization of the term (Harvey, Green, & Burrows, 1993). So it is hard to get a sense of quality by reading a chronology of popular quality related concepts in the higher education (HE) context, as the list is extensive.

However, there are no clear-cut discoveries of principles for motivating and coordinating efforts to promote quality in higher education as there are lists of claims not quite substantiated and promises not quite fulfilled, particularly in terms of promoting quality teaching and learning. Instead, the chronology of quality in the higher education context is more dichotomous, subjugated under two broad umbrella concepts namely, quality assurance and quality improvement. One of the common problem under these two influences is the lack of robust empirical evidence and a type of “one size-fits all” presumption, which leads to a distinctive marginalization of responding to national and institutional contexts (Law, 2010).

The most widely used explanation of quality assurance focuses on accountability. Quality improvement is popularly known for its transformation focus (Harvey & Green, 1993), with a flexible application and use of the term equating to development, empowerment and enhancement (Ewell, 2009). However, most external agencies have not developed any serious analysis of the intrinsic aspects of quality, rather, they have settled for the ‘fitness for purpose’ approach to defining quality (Harvey, 2006). This reflects a lack of alignment of the concept of quality as applied to higher education and the operation of quality assurance processes (Harvey & Williams, 2010).

## **2.5. Student Engagement**

Student engagement is a broad theme that can be defined in many ways. For example, Chapman (2003) defines student engagement as students’ cognitive investment in active participation and emotional commitment to their learning. These definitions encompass a range of perspectives that are crucial for meaningful learning (Zepke & Leach, 2010).

Scholars argue that student engagement is about the students learning experience they had in college or university (Kuh, 2003) and the ways institutions

allocate resources and organize learning opportunities to facilitate students' engagement (Coates, 2006). In essence, student engagement has existed in the higher education literature for over seventy years (Kuh, 2009). In the course of this long period, the construct has been evolving, though varied terms have been used by different contributors (Pascarella & Terenzini, 2005). Kuh (2009, p. 6) has given historical accounts to demonstrate this:

- Time on task (Tyler, 1930s)
- Quality of effort (Pace, 1960–1970s)
- Student involvement (Astin, 1984, 1999)
- Social and academic integration (Tinto, 1987, 1993)
- Good practices in undergraduate education (Chickering & Gamson, 1987)
- Outcomes (Pascarella, 1985)
- Student engagement (Kuh et al., 2005)

At a cursory look, engagement may seem synonymous with a constructivist notion of learning, but Bryson, Hardy, and Hand (2009) argue that “engagement is both a pre-requisite for learning to occur and a binding agent that allows learning to continue to keep occurring” (p.5). Hence the relationship between engagement and learning is reciprocal so that engagement serves as a pre-condition for good learning, while the student learning acts and processes may, in turn; enhance engagement (Zepke & Leach, 2010).

Student engagement is a multifaceted construct that includes behavioural, emotional and cognitive aspects (Fredricks, Blumenfeld, & Paris, 2004). This conceptualization provides richer characterizations of how students behave, feel, and think. The notion of student engagement has now become a powerful concept in the higher education literature as a result of its ability to comprehensively capture critical elements such as students' educational experience, educators' influence and institutional conditions (Coates, 2005). Ewell (1997) argued that if student learning is to be improved, then it is important to study institutional and faculty engagement practices. Faculty behaviours and attitudes affect students profoundly, with some authors arguing that they may play the single-most important role in student learning (Umbach & Wawrzynski, 2005). Also important to student learning are institutional environments that are perceived by students as inclusive and affirming and where

expectations for performance are clearly communicated and set at reasonably high levels (Kuh, 2001; Pascarella, 2001).

Student engagement measures provide an index of whether students are engaging with college or university in ways likely to generate high-quality learning and development (Coates, 2010). One of the first countries to seek to systematically evaluate student engagement was the United States of America (USA), which develops the National Survey of Student Engagement (NSSE, 2001). A similar large scale survey of students' undergraduate experience is available in Australia and New Zealand with the name Australasian Survey of Student Engagement AUSSE (Coates, 2010). The NSSE has five frameworks upon which the students' survey data are organized. These are:

1. Level of academic challenge
2. Active and collaborative learning
3. Student-faculty interaction
4. Enriching educational experiences
5. Supportive campus environment (National Survey of Student Engagement, 2001).

In this study the preferred focus is on student engagement since this is more at the cutting edge of developmental theories about quality teaching and learning in higher education. The concept of student engagement is also an overarching framework encompassing the different potential factors that affect the quality of students learning and educational outcomes.

## **2.6. Instructional Innovations and Teachers' Professional Development**

Changes in classroom practices are essential not only to meet the needs of contemporary students, but also to support teachers' sense of efficacy (Gravani, 2007). From the implementation point of view, the best way to effect change is situating improvement energies nearer to the classroom and to support institutional mechanisms in developing internal capabilities (Engstrom & Danielson, 2006). However, identifying the best ingredients and sustaining a proactive attitude to mitigate problems are central for success (Gosling, 2006).

In the current practice of staff development in the HE context, there is an inherent danger of mistaking the means, that is, 'staff development' for the ends,



these are, 'students' engagement and learning' (Hartley, Woods, & Pill, 2004). Apart from this, the staff development conditions in many higher education systems lack authenticity with the existing realities (Engstrom & Danielson, 2006; Webster-Wright, 2009), and further problems of follow up of the participants (Christine Anne, 2010). Research shows that this occurs when there is no staff development model that can help to describe the purposes of staff development, how it operates, and how it is measured and assessed for further improvement (Gosling & D'Andrea, 2001).

The development of expertise in teaching is facilitated by opportunities for teachers to work together and to learn from each other's day-to-day practice, particularly when there is a focus on analysing and discussing student work and a collaborative effort to improve student learning (Sharan, 2010b; Smith, 2000). Teachers need to be given the opportunity to try out different pedagogies, discuss, and refine them if they, in turn, are to use them in their classrooms (Goos, Dole, & Makar, 2007; Varma, Husic, & Linn, 2008). The literature has identified numerous characteristics of staff development that have the strongest influence on teachers' classroom practices and those repeatedly cited include: opportunities to collaborate with peers and reflect on teaching practices; strong alignment with educational standards; and sufficient time to implement what has been learned (Desimone, Porter, Garet, Yoon, & Birman, 2002).

However, only a few studies have explored how best to prepare teachers to incorporate such pedagogical innovations in their actual teaching. Varma, Husic, and Linn (2008), in a study of targeted support for using technology-enhanced science inquiry modules, found mentoring and coaching by professional development staff as particularly effective in changing teachers' practices. Similarly, Kebaetse (2010) found that scaffolding support for academics in the transition towards independent design of learner-centered environments is imperative if change is to occur. Because scaffolding substantially assisted teachers to develop their knowledge and use of diagnostic strategies and contingent teaching (van de Pol, 2012). These innovative practices have moved staff development away from a "training" model to providing a range of opportunities to support teachers.

## **2.7. Social Interdependence Theory and Cooperative Learning**

**2.7.1. Overview of social interdependence theory.** Social interdependence exists in a typical situation when the goal accomplishment of an individual is affected

by the actions of others (Johnson, 2003). This interdependence between individuals might be positive (cooperative) or negative (competitive) (Johnson & Johnson, 2009). The essence of social interdependence theory is that the structure of the interpersonal situation determines the type of interaction pattern and the pattern of interaction that results determines the outcomes of the situation (Gillies, 2007).

Positive interdependence exists when individuals perceive that they can reach their goals, if and only if, others with whom they are cooperatively linked also reached their goals (Johnson & Johnson, 2002). This results in promotive interaction, which is characterized by mutual help and assistance, exchange of needed resources, effective communication, mutual influence, trust, and constructive management of conflict (Johnson, et al., 2007). Negative interdependence exists when individuals perceive that they can reach their goals, if and only if, others with whom they are competitively linked fail to obtain their goals. This characterizes oppositional interaction as individuals obstruct each other's efforts to achieve, due to extreme competitiveness (Johnson & Johnson, 2009). No interdependence results in the absence of interaction since an individual is completely detached from others. In this type of situation, each individual perceives that he or she can reach his or her goal regardless of whether other individuals attain or do not attain their goals (Johnson & Johnson, 2002). This may result in no correlation among participants' goal attainments (Johnson, et al., 2007).

**2.7.2. The nature of cooperative learning.** Cooperation can be defined as the presence of joint goals, mutual rewards, shared resources, and complementary roles among members of a group (Gillies, 2007; Johnson & Johnson, 2009). The essence of cooperation is working together towards a common goal seeking outcomes that are beneficial to an individual and to all other group members (Johnson, Johnson, & Smith, 1998).

Cooperation requires creating carefully structured small groups so that students work cooperatively and maximize each other's learning (Smith, 2006). *Small* group learning occurs in a great variety of forms. The most common forms include Jigsaw (Aronson, et al., 1978), Student Team Learning (Slavin, 1995), and Learning Together (Johnson & Johnson, 1989). Other ways of structuring CL include Teams-Games-Tournament (Devries & Edwards, 1973), Student Teams Achievement Divisions (Slavin, 1978), Group Investigation (Sharan & Sharan, 1976),

Academic Controversy, Complex Instruction (Cohen, 1994a; Cohen, et al., 1999), and the Structural Approach (Kagan, 1999).

The literatures reviewed in this chapter informed the writings of the different journal articles in the following ways: Social constructivism and sociocultural theories provided the platforms to explore teaching and learning in multiple dimensions and perspectives. Also, a broader review of quality in higher education helped to identify areas to explore and ask questions about the quality of teaching and learning. It does so in a way ensuring questions would be inclusive of areas that are theoretically and empirically proven to shape effective educational practices and significant learning.

Moreover, insights about multiple stakeholder groups governing the quality helped to inform the way quality was examined as socially constructed among subgroups, and the need to focus on students and teachers views of the quality as most salient. These collectively helped to further identify more specific conceptual framework used to guide the development, analysis and interpretations of each article. Similarly, the essence of student engagement informed and guided the different articles both in measuring aspects of quality and mitigating quality problems. This is because the dimensionality and multifaceted nature of engagement need to be considered for a critical examination and deeper impacts. Also, the CL framework and social interdependence theory helped to inform the ways CL interventions were prepared and evaluated as socially constructed among subgroups. Also, it informs the need to focus on the views of the students and teachers in examining the processes and effects of the CL instruction as most salient.

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### **Chapter Three: Quality Assurance in Higher Education in Ethiopia: Boon or Bandwagon in Light of Quality Improvement?**

#### **Abstract**

The notion of quality assurance has become a trans-national issue crossing the cultural contexts of many higher education systems. However, questions still remain whether this notion underpins deeper quality improvement in educational practices and student learning. This article provides a reflective review of a quality assurance initiative in relation to the improvement of quality teaching and learning in higher education in Ethiopia. For this, a critical (emancipatory) paradigm of evaluation (Melrose, 1998) was applied. The analysis and interpretations indicated that this initiative has resulted in only partial benefits, and some unintended ill-effects due to three main reasons. First, there were indications of misalignments and deficiencies shown with the policies, particularly greater gaps at the “micro” or the “individual” level. Second, this initiative showed methodological, empirical and measurement flaws. Third, this initiative was influenced by a number of forces (internal and external) that exist in a situation indicative of a wave of reforms and policy paradoxes. When these are compounded by a top-down, linear approach to policy, that is, most common in the studied context, they served partly to confront intended purposes. In general, there is a lack of holistic thinking in the sense to effect deeper improvement, and a likelihood of hooping on a quality assurance bandwagon, not based on its merits, but based on what others do.

*Keywords:* Ethiopia, higher education, quality assurance, quality improvement

### **3.1. Quality Assurance in Higher Education: An Exploration**

#### **3.1.1. Quality Assurance in Higher Education: The Global Perspective**

In this twenty-first century, higher education has to cope with many inevitable challenges that have emanated from economic globalisation, neo-liberal accountability, advancement in information communication technology, socio-political transformations, and others (Marginson, 2007). Additionally, it should be well-equipped to respond to local circumstances, and be able to create new opportunities by playing the key role for the growth and advancement of society (Hussey & Smith, 2010).

Solutions to these tripartite pressures are sought through similar patterns of reform in the different national contexts, with possible heterogeneity in the response trend which is attributed to national and local circumstances (Perellon, 2005). Research conducted across 9 countries, including France, the United States, South Africa, Indonesia, Israel, Ethiopia, the United Kingdom, Ireland, and Vietnam, indicates that a common set of action repertoires, as well as, distinctive national and institutional contexts, have played key roles in responding to these pressures (Goastellec, 2008).

Over the years, the widening of higher education becomes apparent, internationally (Altbach, 2008). This global trend is partly engraved within a broader reshuffling of the entire higher education sector under the international diffusion of ideas like standardization and outcome-based education and consequential accountability movements. While universities favourably accept the importance of change at the local level, this has not resulted in widespread change, in classroom practice (D' Andrea & Gosling, 2005; Nelson & Robinson, 2006). Thus, the issue of reform is more tending towards organizational restructuring following similar patterns of reform than salient features of instruction.

Quality assurance has emerged as a management tool to prevent quality problems that have been most immediate and pressing to higher education, and this has impacted upon the higher education system of every continent (Ewell, 2010; Harvey & Newton, 2007). However, it is not evident whether current quality assurance initiatives have created more conducive and supportive higher education sector as there is disagreement over their motivation, value and implications (Amaral & Magalhaes, 2004; Mhlanga, 2008; Skolnik, 2010; Westerheijden, Hulpiou, & Waeytens, 2007). For example, there exists motivational paradox between

assessment for quality assurance and assessment for quality improvement, and this represents conflicting interest and divergent focus (Borden, 2010). Also, quality assurance relates to “broader organisational change processes than those more specifically related to teaching and learning” (Stensaker 2008: 10). Moreover, evidence of its effect on student learning remains obscure internationally (Dill & Soo, 2005; Filippakou & Tapper, 2008; Harvey & Stensaker, 2008; Harvey & Williams, 2010a, 2010b; Hodson & Thomas, 2003; Kristensen, 2010; Taousanidis & Antoniadou, 2010).

Quality assurance received warm acceptance by the enthusiastic support of policy makers and education bureaucrats due to its attractiveness to governments with increasing interest for accountability (Stensaker, 2008). However, it has been strongly resisted by academics and students who have experienced alienation under its influence as less concern for their perspectives is shown (Anderson, 2006; Gvaramadze, 2008; Harvey, 2005; Rosa, Sarrico, & Amaral, 2012). Also, there is empirical evidence suggesting the political non-neutrality of quality assurance (Skolnik, 2010; Westerheijden, 2007). Further, parallel supporting evidence emerged from Africa that criticized the political fuzziness of assurance (Khelfaoui, 2009), and its ramifications for higher education institutions operation and academic practices (Mhlanga, 2008; Shawa, 2008).

While there have been a number of criticisms of the quality assurance approaches in higher education, internationally (see Law, 2010, pp. 362-363 for a summary), its essence remains at the core. For the Western nations, this has often been interpreted as a concern to maintain economic dominance through the pursuit of high calibre working forces (Westerheijden, 2007). However, developing countries have sought this through the intervention of supra-national authorities and agencies such as the World Bank, influencing to import policies, which mirror the higher education system of Western countries, in order to accelerate economic growth (Collins & Rhoads, 2008; Lim, 2001).

### **3.1.2. Quality Assurance in African Higher Education Context**

Today, quality assurance is becoming an integral part of Africa’s higher education systems as governments, in some parts of Africa, have shown their concerns and commitment to its establishment and operation (Hayward, 2010; Materu, 2007). The adoption of quality assurance in Africa seems a replication of the

'Bologna Process' (Khelfaoui, 2009; Mhlanga, 2008; Shawa, 2008), reflecting 'symbolic adaptation' (Schwarz & Westerheijden, 2004) or a metaphor of 'policy borrowing' or 'transfer' in education (Phillips, 2005; Turbin, 2001). For example, the conceptual understanding of quality as 'fitness for purpose' is similar almost everywhere. There are shared similarities in objectives, approaches to quality assurance procedures, how the different data collection tools are employed, and the nature of the outcomes (Materu, 2007).

However, there are distinct features added to the adopted quality assurance scheme. For example, South Africa utilizes "fitness for transformational purpose" type of conceptualization (Lockett, 2005), which is the result of integrating quality assurance with the country's dire need to influence economic and social transformation. A further paradigm shift is underway in South Africa to establish a culture of collecting national evidence of quality through a promising area of emphasis: student engagement (Matthew, Ashleigh, & Christopher, 2012; Strydom, Basson, & Mentz, 2012). Elsewhere in Nigeria and Ethiopia, a national university ranking process, as one of their yearly activities, was incorporated into their higher education system core business (Materu, 2007; Tadesse, Manathunga, & Gillies, 2012). This ranking exercise seems a positive influence when it is seen at the surface. However, as the concern of those higher education institutions leaders has increased, its long-term detrimental impact upon the higher education quality culture becomes real, internationally (Bookstein, Seidler, Fieder, & Winckler, 2010; Harvey, 2008; Marginson & van der Wende, 2006; Tambi, Ghazali, & Yahya, 2008; Usher & Savino, 2007).

Other differences are the result of the socio-political circumstances prevalent in the various parts of Africa. For example, the lack of facilities and outmoded curricula are prominent quality issues in African universities, and a further imbalance between core values of higher education and a profound influence of managerialism (Ntshoe, 2004; Teferra & Altbach, 2003). Research shows that the quality assurance systems in Africa are operating in a hostile environment where governments insisted on increased access, at the same time, that they were demanding quality outputs while interfering in university governance (Hayward, 2006). Under these circumstances, it is difficult to maintain autonomy, regarded as essential for creativity and learning (Materu, 2007; Mhlanga, 2008). This untenable situation has led to uncertainty about how to accommodate these pressures without compromising

higher education institutions' academic purposes (Khelfaoui, 2009; Stroydom & Stroydom, 2004) and to further implementation constraints (Shawa, 2008).

### **3.1.3. Quality Assurance in Ethiopian Higher Education Context**

In Ethiopia, there exists a rapid expansion of the higher education system since the mid-1990s. This expansion entails the increasing of access to higher education and the widening of participants in higher education through extension, summer, and private programs (Yizengaw, 2007). Expansion fuelled the proliferation of new regional universities to counterbalance the centralization of higher education institutions around the capital, Addis Ababa (Goastellec, 2008). In the academic year 2011/12, the higher education sector hosted the total 494,110 students in the regular, evening, summer and distance education programs both in government and non-government institutions (Ethiopian Federal Ministry of Education, 2012). While the proportion of women students accounted for 28.2% of the total enrolment, the private sector accommodated (37.1%) of the total student population. Despite these rapid expansions, Ethiopia's Gross Enrolment Rate (GER) is 5.2%. This appears huge for the country compared to institutional capabilities, yet it is still minimal compared with the 7% Gross Enrolment Rate within the continent of Africa, and a 26% average rate worldwide (UNESCO, 2009). Thus, to level with these, Ethiopia needs to increase the extent of expansion within the country, at the same time, improving the quality of the higher education system.

In Ethiopia, the role of higher education as a backbone of the country's development effort to eradicate poverty is given a central position and part of the vision is concerned with improving the quality and employability of university graduates (Federal Ministry of Education, 2010). It is definitely true that quality assurance is important for achieving the development goal of the higher education system, thereby contributing for the attainment of the country's central agenda (Ashcroft, 2004). Before moving on to discuss the policy and its implementation, it is good to turn briefly to consider the history of quality assurance in the higher education in Ethiopia to see how it has become established as a core component of maintaining and improving quality.

One of the most important reform initiatives that offers legal base for the rapid expansion of the higher education, and the establishment of a quality assurance system in the country is the proclamation number 351/2003 (Federal Democratic

Republic of Ethiopia, 2003). As well, the new higher education proclamation number 650/2009 has given directions to the higher education sector by formulating improved policy and mandating structural changes (Federal Democratic Republic of Ethiopia, 2009). The standards include describing the very essence of student-centered methods and continuous assessment and how it has to be implemented. All course instructors or course teams shall conduct continuous assessments in a given semester. Forms of continuous assessment may include tests/quizzes (written/oral), class assignments, class presentations, laboratory reports, essays, seminars, in-class tests, projects, take-home assignments, term papers, practical demonstrations and/or any other elements specified by the instructor or department in the team charter or course outline. The evaluation may be designed to assess the students' performance in group or individually and the students shall receive feedback before the subsequent assessment.

Following this proclamations, a national agency was established in 2003. A couple of pilot external quality assessments were conducted in one private college and one governmental university, in the 2005 academic year. Later on, a large scale quality audit has been conducted in the then relatively older nine government universities. In relation to the agency's work, there are emerging research reports that justify the challenges of exercising quality assurance (Ashcroft 2004; Aschroft & Rayner 2010, 2011; Nega 2012; Semela 2011; Teshome & Kebede 2010).

Regardless of these, the existing reality in the higher education institutions is complicated by problems of resources and shortage of realistic quality parameters (Tadesse, et al., 2012; Zerihun, 2006). Research reveals existing deficits in relation to these complications and advances strong recommendations to change (Asefa, 2008; Cantrell, 2010; Nega, 2012; Zerihun, Beishuizen, & Van Os, 2012), but so far there is no supporting evidence about the actualization of such recommendations being implemented. This study examines the salient role of quality assurance to the improvement of quality teaching and learning. Thus, the purpose is on the production of general ideas of the most promising approaches to the questions of quality teaching and learning to be used as platform for the interventions. Before going into the detail analysis, let us clarify some technical terms and conceptual models of the study.



## **3.2. Methodology**

### **3.2.1. Conceptual Definitions**

In this article, critical (emancipatory) paradigm of evaluation was applied (Melrose, 1998). The article follows an informal, critical, self-study approach (Mertens, 2010) based on secondary information found in documents (policies, official frameworks & guidelines, research reports, & proclamations), informal conversation with university students and academic staff, and professional insights of the author working as a teacher, researcher, academic developer, and education quality expert in higher education institution.

This paper adapted D'Andrea's (2007) interpretations of macro and micro levels. Accordingly, macro-level refers to national/institutional higher education policies that affect tertiary institutions. Micro level or individual level refers to the local practice at the smallest level of the organizational unit of the higher education community in relation to the teaching/learning processes including curriculum planning, the interaction between the teachers and students, among others.

The concepts "boon" and "bandwagon effect" need explicit descriptions of their meanings as intended in this article. This article conceptualizes boon as possible benefit sought from quality assurance pertaining to the higher education system operations. However, advantage may be relative, so this study considers the possible positive influences it has brought in assumptions, beliefs and practices. Thus, benefits include success stories and improved situations as a result of engagement in quality assurance. Also, the concept bandwagon effect represents a group thinking process grounded in a social dynamic to reveal a tendency to follow the actions or beliefs of others (Colman, 2003). The concept bandwagon effect equates to the essence of policy borrowing and policy transfer in education (Phillips & Ochs, 2003), as well as, external rationalization (Schwarz & Westerheijden, 2004).

This study examines whether the triggering forces, processes, and consequences of quality assurance constitute a substantial means by which Ethiopian higher education institutions improve the quality of teaching and learning. In so doing, the study provides an initial exploration of quality issues from an academic perspective. To further understanding on the quality assurance, the researcher incorporated, into the critical analysis, a quality assurance analysis model and a conceptual lens. The analysis and interpretations of quality assurance, in this form, creates opportunity to establish a solution-focused approach to quality

problems instead of focusing on retrospective problem diagnosis (Brown, 1992). Moreover, it provides an alternative vantage point from which to evaluate the potency of quality assurance to promote the improvement of the quality.

### 3.2.2. Conceptual Model of Analysis

Perellon's (2007) quality assurance framework was applied to chart the essential elements of quality assurance policy. One of the distinguishing characteristics of this framework is domain analysis based on substantive contents across five dimensions. These dimensions include objective, control, focus areas, procedures, and use. Perellon's framework was found appropriate for this study since this provides a platform to critically analyse quality assurance as this assists in the exploration of the processes involved in 'cross-national attraction' and its likely consequences (Philips & Ochs, 2003). Perellon's (2007) five dimensions are defined as the following:

- *Objectives* refer to the intended targets of quality assurance representing desired outcomes.
- *Control* refers to the authorized people in the higher education community who are responsible for monitoring the process of quality assurance.
- *Areas* denote the major components involved in the quality assurance practices.
- *Procedures* imply the setup of the quality assurance arrangements.
- *Uses* refer to the scope of utilizing the information collected or data sources.

Policy development process, as Darling-Hammond elaborated in her article "Policy and change: Getting beyond bureaucracy" (2005), is evolutionary, and it extends through "the basic ways in which policy is conceived, developed and put into practice" (p. 362). This article provides descriptive accounts of the Ethiopian higher education quality assurance and examines the salient role of quality assurance to the improvement of quality through a critical analysis of them with the essential elements of quality improvement embodied in the literature. The analysis and interpretation would help to identify areas that should be maintained, and what improvements would help to maximize benefits and find better ways to.

### **3.3. Critical Policy Analysis and Evaluation**

#### **3.3.1. The Ethiopian Higher Education Quality Assurance Policy**

Here the adopted national quality assurance policy of Ethiopia (Higher Education Relevance and Quality Agency, 2006a, 2006b, 2006c), and the corresponding policy of one of the universities (Jimma University, 2011a) are presented using Perellon's (2007) five dimensions.

##### **3.3.1.1. National quality assurance policy of Ethiopia.**

###### *1. Objectives:*

The agency espoused mission is "to ensure a high quality and relevant higher education system in Ethiopia." *Its* operational objectives include:

- Assessing the relevance and quality of higher education,
- Ensuring that the curricula support the country's development needs;
- Providing an efficient and transparent accreditation system; and
- Disseminating information regarding standards and programs.

###### *2. Control:*

In Ethiopia, quality assurance is operated by a national quality assurance agency. In the document exploring this dimension, higher education institutions are the owners with the national quality assurance agency being mandated to work independently.

###### *3. Areas:*

Major components: Accreditation, audit, and curriculum harmonization.

Main activities include developing quality assurance guidelines and procedures, and promoting stakeholders awareness and participation.

Focus areas: There are 10 focus areas for internal and external quality assurance.

1. Vision, Mission and Educational Goals
2. Governance and Management System
3. Infrastructure and Learning Resources
4. Academic and Support Staff
5. Student Admission and Support Services
6. Program Relevance and Curriculum
7. Teaching, Learning and Assessment
8. Student Progression and Graduate Outcomes
9. Research and Outreach Activities
10. Internal Quality Assurance

#### 4. *Procedures.*

Three step procedures, including institutional self-evaluation, external audit, and peer-evaluation are the norms. There are also, quantitative performance indicators and scoring procedures.

#### 5. *Uses.*

Predominantly used for reporting strengths and weaknesses of the institutions and accountability to ministers. The institutions are autonomous in deciding whether to disseminate findings to the public or not.

### **3.3.1.2. Quality assurance policy of a university in Ethiopia.**

#### 1. *Objectives:*

Although it was not directly written under the title of objectives, there are descriptions of statements typifying the purposes of quality assurance scheme institutionally. The lists of statements include the following.

- Ensure the practice of discussion on the processes of teaching, learning and assessment periodically.
- Provide orientation on remedial programs.
- Facilitate discussion with students and academic staff on matters related to academic remedial program.
- Assist in departments/colleges and other academic bodies in the development of standards.
- Assist in establishing central examination data base. Sample exam for each course will be collected at the end of each semester.
- Oversee the functioning of examination committee and team charters' activities at the department level.
- Assist in developing policies and instruments for quality assurance of academic programs.

#### 2. *Control:*

Though they are still under establishment, at the institution level, there are quality assurance office structures across the different colleges and these offices are mandated to monitor and assure quality with a centrally coordinating office of Academic Program and Quality Assurance (APQA).

### 3. *Areas:*

There are three main areas of concern for the internal quality assurance policy.

- a. Academic remedial actions for undergraduate students who scored less than 55% of a set of continuous assessment activities.
- b. Affirmative action tutorial programme for female students.
- c. Academic remedial actions based on Department/School recommendation.

The main activities include the following.

- Developing quality assurance guidelines and procedures.
- Promoting stakeholders awareness and participation.
- Actively involving in university and college level internal and external quality assessment/audit activities.
- Assisting in the development and review of examination policies and ensure their proper implementation, and
- Proposing the improvement plan based on quality assessment results.

### 4. *Procedures:*

There are three step procedures, beginning with Department level review of performance, followed by, College level review, and finally institutional review. There are also, quantitative performance indicators and scoring procedures.

### 5. *Uses:*

At the institution level, there is reporting of reviews and reports to the Department heads, College deans and to the central APQA office, when applicable. Also, the review reports are used for further planning for improvement.

### **3.3.2. Critical Issues of Quality Assurance and Key Challenges Ahead**

While globalization is the prime impetus to the borrowing of quality assurance policies and practices between countries, the major problem lies on the background theory, and the emphasis placed on structural and institutional factors (Law, 2010). Although the underlying theory has not been explicitly stated, the notion of quality assurance relates to the theory of the learning organization, which addresses the macro level of analysis and sees change as a function of policy mandating and corresponding changes in organizational routines, values and practices.

The reviewed quality assurance policy documents of the Ethiopian higher education have some technical soundness to fairly execute quality assurance. The first advantage is that emphasis on quality assurance helped Ethiopian higher education institutions to become more concerned with external requirements, and this potentially provides initial impetus to start discussing issues of quality. This has had a profound influence on the way in which the entire higher education sector has invested their resources to shape up the direction of their quality focus. This has been supported in the literature as quality assurance exercise as having an initial positive outcomes in the development of quality culture (Harvey & Stensaker, 2008; Trowler, 2005).

Yet, there are still some blurred areas both nationally and institutionally that need further clarity when seen from the perspective of quality improvement. For example, aspects of the assurance purposes focus areas and standards. As presented in the previous section, the agency's stated objectives are means not ends. While the end is to bring lasting change, for example, in the quality of the graduates' competencies, 'assessing quality' and 'disseminating information' represent means. Guided by this, a university also mistakes the means to an end, as it is dealing with, for example, 'ensuring the existence of discussions and reviews' rather than targeting 'its effects'.

Moreover, as presented in the previous section, the Ethiopian quality assurance applies measures of teaching inputs such as 'infrastructure, learning resources, and academic and support staff,' as indicators of quality. This is educationally inappropriate as it lacks paying attention to the actual achievement of students resulted from these teaching inputs (Maher, 2004). The same policy document states student progression and graduation outcomes as indicators of student achievement. In practice, these are rather performance indicators (Kis, 2005) and tell very little about the learning experiences and students success rates (Coates, 2005; Pascarella, 2001). Thus, a more realistic and genuine measure of the value of higher education than a measure of teaching input and institutional performance is highly desirable.

Also the standards seem blurred. Green (1994) states: "Standard is a basis for measurement, or a yardstick – a neutral term to describe a required characteristic of a product or service" (p.13). In the sense of quality assurance, it means that the standard should be the norms, expectations and specifications adopted (Harvey &

Newton, 2004). From this view, the current descriptions of the ten focus areas are merely *labels* described as a list of areas for evaluation. Likewise, there is no specific description about standards in the quality assurance policy of the studied institution. To endow these with substance, the standards should outline the generic principles that should be in place rather than just specifying the focus areas. Thus new standards need to be prepared with clear descriptions of specific items such as standards of competence, service standards, and organisational standards. In this regard, the government, as *owner* has stipulated the structure and principles of expected standards for the higher education (Federal Democratic Republic of Ethiopia, 2009). Also, the Ethiopian higher education strategic centre has given detailed descriptions of the graduate competencies (Higher Education Strategy Center, 2012). However, inconsistently the government is responsible for flouting the principles when it comes to issues of expansion (Ashcroft & Rayner, 2011). There is a critical need for the agency to strongly work towards ensuring the fulfilment of minimum thresholds at every higher education institution, and institutional assurance bodies need to do the same at every college.

The other critical point is the national agency's operations as well as the location of quality assurance organs institutionally. Nationally, the assignment of the agency's executive has been made on the basis of bureaucratic rationality rather than professional authority, thus quality is controlled by a government appointed agency, thereby ensuring that the body lacks independence. This is similar with the situation in other African countries (Materu, 2007). Likewise, the assumed position of the quality assurance body within a university does not empower those working in quality assurance and quality care to be independent as budget and operations are dependent on the decisions of high ranking officials, with activities and decisions being subject to the serious scrutiny of this order. This creates favourable conditions for powerful influence of managerial rationality (Barnett, 2003). This arrangement compromises their potential influence for safeguarding quality.

### **3.3.3. The Aggravating Factors and Conditions Leading to Quality Assurance**

In the Ethiopian higher education system, the adoption of quality assurance and the decision to establish the national quality assurance agency, and similar institution-based quality assurance bodies occurred under the influence of several forces, both internal, that is, from the higher education institutions and from

unforeseen external influences as well. One of the internal influences was the long held tradition of a nominal quality assessment practice routinely exercised for the purpose of fairly fulfilling accountability requirements and staff promotion. These evaluative processes were, however, powerless to influence improvement and innovativeness (Zerihun, et al., 2012).

Another problem was the higher education institutions failure to acknowledge individual and bottom-up quality improvement initiatives, and inability to make use of research results, and the need to exercise institutional autonomy on academic matters (Bekele, Tadesse, & Kebede, 2010; Jimma University, 2008). The other important influence in creating a bottleneck is the government's excessive interest in accountability and its centralized control and top-down, linear adoption model.

Moreover, the quality assurance process was conducted at the same time as the entire higher education landscape was being re-structured through a process termed 'Business Process Re-engineering' (BPR). This poor timing meant that there was much uncertainty in the system with restructuring takes precedence over quality assurance. On top of this, the donors who granted funding and foreign advisors were also influential in determining how events played out (Ashcroft & Rayner, 2010). These external push factors are more indirect. The main sources of external influence were the following:

- the World Bank, which used to offer advice and low-cost funding;
- the United Kingdom, through assigning experienced academics to assist in the national quality assurance agency, and
- The Netherlands funding projects that were mainly run through Vrije Universiteit Amsterdam.

Moreover, issues of quality are not dealt with impartially as they are under the influences of different stakeholders and this has created external ownership leading to compliance, but with some achievements and consequences.

### **3.3.4. What Does Quality Assurance Bring to Ethiopian Higher Education?**

**3.3.4.1. The boons of quality assurance.** In the Ethiopian higher education, current efforts via quality assurance have offered some benefits in terms of initiating the test for quality via creating awareness on the need to establish quality



assurance, and increasing the use of quality assessment structures and processes. Moreover, the establishment of a national quality assurance agency was followed by a series of developments, including program specifications (with a focus on graduate profiles and mechanisms of quality assurance), and institutional self-evaluation, and external quality audit. Likewise, there were trial collaborative projects to establish a qualification framework for higher education with the help of experts from South African Universities. Also there has been an increased attention to subject benchmarking at the national level that followed by a number of consultative workshops to raise awareness and share experiences.

The other benefits are generated from the national quality assurance agency's continual effort to provide training support and wider disseminations of the external quality audit experiences and updating current developments via the national agency Newsletters. These are good sources of enrichment (Teshome & Kebede, 2010). It is critically important to think of other constructs that may provide more fertile sources of supplementation to these efforts.

Within the universities, there are some emerging developments in terms of preparing and using academic quality assurance guidelines. The concerned ADQA office has given special attention to some relevant quality assurance themes, for example, remedial actions for academically low performing students, affirmative action for female students, and remedial action based on Department/School special recommendation.

#### **3.3.4.2. The bandwagon effects of quality assurance.**

**Higher education institutions dynamics.** There are foreseeable negative outcomes of a quality assurance initiative. However, it is too strong to say that outcomes have been the results of, only quality assurance, since other compounding factors such as rapid expansion, similar reform initiatives, and the lack of baseline data have intensified the situations. One of the major consequences of quality assurance was the development of policies and guidelines that are more concerned with regulations and steering of procedures. Also structural organizational changes are apparent. These outcomes are evident in other higher education systems as well (Mhlanga, 2008; Westerheijden, 2007) implying that quality assurance, in effect, is meant for broader organisational change and accountability mechanisms (Ewell, 2009; Harvey, 2005; Stensaker, 2008).

A cursory look into the adoption process and the duplication of orientations and actions in the quality assurance exercises lead to the assertion that a culture of conformity and adherence to the national reform policies and guidelines is growing in Ethiopian higher education. Also apparent is a shift in focus with the mobilizing of resources to fit with external requirements, for example, recent efforts to conduct the tracer study and join the modularization model (Higher Education Strategy Center, 2012; Jimma University, 2011b). Moreover, there is a changed role for academic developers now consumed by quality assessment and assurance requirements rather than a real commitment to quality care as they engage with their routine activities (Tadesse, et al., 2012). This outcome was one of the fears expressed by Cantrell (2010) and has unfortunately become realized. Thus the pursuit of quality assurance has led to inefficient practices and distracted the institution's attention away from more essential activities.

***The teachers and the students: Assumptions and beliefs.*** It seems that a new belief system acknowledging the centrality of student satisfaction as opposed to student's productivity has come into play. Also scepticism is apparent as the academic staff members have complained extensively about over prescriptive teaching and assessment policies and managerial control over their class attendance, particularly at the beginning of a semester. Currently there is increasing pressure to embark on achieving modularization and Balanced Score Card (BSC) as part of the neo-liberal accountability agenda (Higher Education Strategy Center, 2012). There is a tendency of switching from teaching students to delivering modules (Hussey & Smith, 2010). While the advantages of BSC model over traditional forms of performance measuring tools and its institutional implications are very clear (Kassahun, 2011), this contributes more as government regulation and steering tool (Harvey & Newton, 2007), mainly used to promote bureaucratization as opposed to quality improvement (Barnett, 2003).

In spite of these facts, the new initiatives have created further burdens on Ethiopian university academics. In response to the changed culture, the academic staff members are complaining that their lives are now governed by a quality audit culture rather than one based on trust and respect. This audit culture has potential negative implications for the future of the academic profession, with the possibility that the decline in quality teaching and learning will intensify.

### 3.3.4. Can Assurance Assist in the Process of Improving Quality?

Quality assurance as it is currently interpreted in the Ethiopian higher education context is much focused on the structural and institutional factors rather than the educational practices and student learning experiences. As a result, the information provided by a quality assurance approach is primarily useful to measure higher education institution and system progress, but of more limited utility for instructional guidance. It is argued here that quality assurance is a relatively weak intervention to ameliorate the quality because, while it reveals shortcomings, it does not contain the guidance and expertise to inform responses.

Regardless of this, there are persuasive arguments in favour of quality assurance as it promotes both accountability and improvement, at the same time (Teshome & Kebede, 2010), and this has impacted the entire higher education system. Scholars argue that, rather than being directed to the essential elements of quality improvement, and to the pressing academic and practical problems, the quality assurance underpins on how the quality assurance is to be accomplished (Harvey & Williams, 2010b; Huisman & Westerheijden, 2010; Schwarz & Westerheijden, 2004). This is so because quality assurance appears to be based on transfer theory of learning, which does not recognise the complexity and contextual nature of educational change (Squire, MaKinster, Barnett, Luehmann, & Barab, 2003).

Also, the Ethiopian higher education context is not the same as that found in Europe or elsewhere (Goastellec, 2008). Conditions for Ethiopian academics are likely to be more burdensome (Assefa, 2008; Nega, 2012; Tadesse, et al., 2012; Teferra & Altbach, 2003). However, there has been remarkably little discussion of appropriate strategies for shifting thinking and practices at the micro or individual level. In short, imposing criteria and looking for evidence of conformance to processes and procedures, as currently the Ethiopian higher education system is aggressively pursuing, the *illness* in higher education academe related to improving and sustaining quality teaching and learning is being effectively ignored.

Moreover, quality problems can be partly caused by the values and assumptions that underpin different aspects of pedagogy and assessment (Haggis, 2006; Hayward, 2010). Indeed, a rigorous study to understand the different factors influencing the realities for academics and students is desperately needed. More importantly, there needs a proper quality measurement that is valid, contextualized,

and closely linked to an improvement plan and execution (Harvey, 2005) because improvement requires moving forward through action (Rosa, et al., 2012).

However, in the current form, the institutions are distracted from the real work of quality improvement by the emerging domestic annual ranking of universities, which is the quality assurance showcase of the Ethiopian higher education system, positively deceiving institutions into thinking that they are performing well. Seen critically, this may be risky as it may contribute for many institutions of the country becoming complacent, and as a consequence, business as usual mind-set is resumed. Moreover, the emerging national ranking of universities seems a futile exercise as it has been complicated with the use of quantitative indicators, institutional annual reporting at times of heightened accountability and a major weakness in measuring what matters most for the students learning. Of course, measuring quality is not as simple as *bean counting* and it is not also a matter of *counting everything* as quality is more complex and some variables are more powerful in influencing students learning than others (Coates, 2005; Kuh, Kinzie, Buckley, & Hayek, 2006; Tam, 2001, 2007). This hierarchy needs to be recognized and acted upon.

According to Yorke's (1998) recommendations, a higher education system can be treated as a complex set of levels, with the macro levels (e.g. the institution or program) being more responsible for the accountability aspects of educational quality, and the micro levels (e.g. individual) more responsible for the enhancement aspects. As we move from the macro levels towards the micro levels, the quality indicators that are of importance significantly change, and become more related to the individual. In this multi-level system, quality indicator data should be evaluated and acted on at the lowest level possible, and higher levels are expected to audit whether the data have been obtained and acted on properly. By way of establishing such a multi-level quality system, and strengthening the relationships between them, it is possible to maintain the validity of evidence, prevent methodological flaws, and assist in proper planning and execution of evidence-based quality improvement.

### **3.4. Conclusions**

This study has presented a reflective review of the Ethiopian higher education quality assurance, and has evaluated some of the central benefits and drawbacks of adopting this approach in light of quality improvement. It is argued here that there

are three fundamental problems underlying the quality assurance towards enhancing teaching and learning in the Ethiopian higher education system. First, the initiatives are underpinned by a policy mandate and inadequate tacit theory of change. Second, although they (the initiatives) are supposed to address different levels of analysis in the higher education system, they do so in a partial and fractured way, compounded by methodological, empirical, and measurement weaknesses. For example, quality assurance policies both at the national and institution levels focused on input, quality assurance processes, and institutional performance. Third, these initiatives were influenced by a number of forces (internal and external) that exist in a situation indicative of inconsistencies (Trowler, Fanghanel, & Wareham, 2005). These may serve to undermine their effects. In short, there are indications that the initiatives lack a *holistic thinking* to effect deeper improvement, to use the concept from the title of this article, a possibility of hooping on a quality assurance bandwagon, not based on its merits, but based on what others do.

This study argues that the issues of quality assurance that have received so much attention over the years with regard to teaching and learning are unsound in precisely addressing the forces limiting the effectiveness of the higher education sector. This is mainly because the notion that a precise instrument for measuring what we are doing educationally is the answer to a failing system is surely simplistic and erroneous (Sahlberg, 2007). The result is that wherever poor outcomes exist, they have been hidden by the excessive concentration on processes, and by a complacency that arises because good processes are easier to achieve than good outcomes (Mahsood, 2012). Rather due recognition of the complex nature of teaching and learning, and a profound understanding of how students learn is required, if progress is to be made in raising standards and quality in the higher education sector. Thus, authorizing quality assurance alone will not influence the changes that are necessary to make a qualitative difference to the Higher Education experience in Ethiopia. The current outstanding effort by South African higher education system, that is, a shifting focus to student engagement is exemplary in contextualizing issues of quality closer to the pedagogic practices, and the students learning experiences (Strydom, Basson, & Mentz, 2012).

Of course, there is a serious quality problem in the Ethiopian higher education academe. What the higher education sector most urgently needs, however, is painstaking attention to its real deficiencies. Getting on the quality assurance

bandwagon is merely imitative of a Western first world solution based on external rationalization (Kelly, 2007; Khelifaoui, 2009; Obasi & Olutayo, 2011). Although the arguments presented in this paper are theoretical, the conclusion can also yield an empirical hypothesis, amenable to practical investigation.

### **3.5. Implications of the study**

First, there needs to be better, more explicit thinking about the points, values, and levels at which the quality assurance policies and their implementation strategies be addressed, and the gaps in policies and strategies oriented to the micro level in particular needs to be worked out. Second, the theories of change which underpin the quality assurance policies directed at enhancing teaching and learning in higher education need to be made explicit. An appropriate theoretical approach might be social practice theory (Wenger, 1998; Engestrom, 2001). By virtue of establishing the basis of quality assurance with a social practice theory of change, it is possible to address the micro level, at the same time, accommodating the different dimensions of change such as the social, affective, psychological and cognitive aspects (Trowler, et al., 2005).

As a result of engagement in a quality improvement process associated with major tasks, participants will involve in the social construction of reality, at least in the areas of commonly shared practices that they have. It is through this process that initiatives for the enhancement of teaching and learning will, then, be switched from a focus on the structural and institutional factors to the practical and sociocultural domains. A deeper improvement of quality is a long-term affair that requires a willingness of everyone in the institution to change to a culture of quality, which is improvement-led, research informed, and evidence based. Matru (2007) perfectly puts this phenomenon, when he says; “institutions are owners of quality and a culture of quality is most relevant” (p. 123).

However, initiatives require the delegation of responsibility for quality and standards down to the individual level where innovation, responsiveness and trust can play out (Sahlberg & Hargreaves, 2011). This is the main challenge for those working on quality assurance to expand and further their roles. On balance, it needs to pay special attention on proper diagnosis, empowerment, and building a culture of cooperation.

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## **Chapter Four: The Hidden Lacunae in the Ethiopian Higher Education Quality Imperatives: Stakeholders' Views and Commentaries**

### **Abstract**

With the increasing popularity of quality assurance across several higher education systems around the globe, the quest for accountability has become paramount. However, research on stakeholders' perceptions of and responses to the quality and the institutions' own academe has remained largely untouched. This study provides empirical evidence that examines such neglected areas of research interest. It did so through a qualitative case study design, which required interviewing selected senior managers, academic staff, students, and education quality experts. The findings of this study revealed quality gaps in two ways, including discrepancy between expectation and actual practice and mismatch between how much academic members and others perceive students are engaging and what they are actually doing in university. Moreover, diverging views of stakeholders became apparent. One of the salient factors contributing to these gaps was a systemic failure to engage students in rigorous and relevant learning experiences. It is suggested that contextually appropriate interventions need to be adopted that mitigate quality problems, and build a context for cooperation and change in academic values and culture.

*Keywords:* Ethiopian, hidden lacunae, higher education, quality, stakeholders

#### 4.1. Introduction

Quality improvement is a neglected component amongst the plethora of higher education quality imperatives. This neglect appears to occur mainly because of exclusive concern given to quality assurance by external regulatory agencies, university senior managements and others (Harvey, 2006). Regardless of this predicament, improvement depends potentially on developing definitions and interventions that traverse the concerns of various stakeholders (Houston, 2008), and being attentive to contextual realities (Strydom & Strydom, 2004).

Quality assurance denotes the notion of 'fitness for purpose'; as such, serious doubt remains about the effectiveness of this construct for achieving sustained quality improvement in the higher education setting (Houston, 2008). One of the central queries concerns how far a quality assurance process has produced improvement in the learning experience of students (Harvey & Williams, 2010b). To this point, empirical evidence appears to be conclusive, affirming the disjunction between a micro-level instructional activity, and a macro-level quality review (Blase, 2005; Stensaker, 2008). The implication is that quality assurance has had little effect on the day-to-day activities of higher education teachers (Rosa, et al., 2012).

Moreover, Ewell (2009) based on two decades of research has noted the disproportionate dominance of accountability over improvement. He suggests, "When institutions are presented with an intervention that is claimed to embody both accountability and improvement, accountability wins" (Ewell, 2009, p. 8). From a developmental perspective, a focus on improving quality is evolutionary, and thus major challenges are presented potentially curtailing prospective growth (Lomas, 2004; Rice, 2006). Efforts to improve the quality are most likely weakened when little attention is given to understand the institutional culture that reinforces the status quo, and perpetuates everyday common actions (Kezar & Kinzie, 2006).

Many higher education institutions often report students' outcomes based on graduation and persistence rates (Hu, 2011). The best way to be able to increase the number of students who are persistent, and be able to graduate, is to admit well-prepared, academically talented students (Kuh, 2001). The problem with this approach is understandable, particularly at this time as there are more diverse pools of undergraduate students entering into higher education every year (Hussey & Smith, 2010). Thus admitting those students who are motivated and talented is neither a solution nor an option (Kuh, et al., 2005). The only sure way to cope with

this and find the better alternative is to look for other promising approaches that are likely to enhance students' success in higher education (Haggis, 2006). Decades of research studies on the impacts of higher education on students' success suggest a promising area of emphasis: student engagement.

#### **4.1.2. Rationale for the Study**

Although student engagement is central to higher education institutions, quality as demonstrated in their learning experiences certainly has not attracted attention (Filippakou & Tapper, 2008; Harvey & Williams, 2010). This is particularly true in Sub-Saharan Africa, as interest to improve the quality has been directed more towards adopting standards and procedures of quality assurance (Khelfaoui, 2009; Materu, 2007), than paying considerable attention to the institutional and classroom cultures (Chisholm & Leyendecker, 2008; Schweisfurth, 2011). Instead, in the Sub-Saharan Africa, the current focus resides in understanding the underlying philosophy of quality assurance processes and establishing and sustaining quality assurance systems (Mhlanga, 2008). Primarily, this focus is not relevant to most students and does not address their real learning problems (Ewell, 2009; Westerheijden, Hulpiau, & Waeytens, 2007).

Moreover, this focus could be misguided, in that the issue of concern is not about how quality might be improved or how learning could be enhanced, but whether or not the higher education institutions and the national agency understand the technical rationale behind quality assurance and learn how to function in meeting its requirements (Harvey, 2006; Houston, 2008). It seems that this has precluded institution focusing on those conditions that matter most for effective students learning.

In the Ethiopian higher education context, teaching qualities are considered mainly in terms of the details of curriculum planning, including the contents of teaching and on the range of teaching and assessment strategies adopted (Zenawi Zerihun, Jos Beishuizen, & Willem Van Os, 2012). Also, there is minimal attention given to the roles that teachers play as designers and facilitators of classroom learning (Tadesse, Manathunga, et al., 2012). Moreover, there has been little analysis of the learning experiences of undergraduate students in Ethiopia, and the institutional conditions and factors influencing student engagement (Bekele, et al., 2010; Tadesse, Asmamaw, & Getachew, 2012). These results suggest that little

consideration has been given to the desirable qualities of higher education teachers for conducting essential pedagogical responsibilities.

Drawing upon evidence from some selected senior managers, students, teachers, and education quality experts, this study explored the nature of student engagement experiences while participating in the Ethiopian higher education system. The aim is to obtain a holistic view of the conditions governing teaching and learning in the undergraduate programs, searching for patterns, and developing assertions that might be used to capture an in-depth understanding of the status quo. In this study, the term *student engagement* refers to students' active participation in academic activities, as well as referring to the time and effort students spent both inside and outside the classroom on academic work (Kuh, 2001). More specifically, this study explored the following research questions.

1. How do the stakeholders perceive the qualities of a good teacher and the qualities of a good learner?
2. What do teachers' pedagogical practices and students' learning experiences look like?
3. What do the participants say about the level of students' academic engagement in the Ethiopian higher education context?
4. What factors are associated with students' academic engagement and how can students and academic staff members improve the quality of undergraduate education?

## **4.2. Methodology**

### **4.2.1. Research Design**

This study applied a qualitative case study design (Creswell, 2007). By raising fundamental questions about the prevailing academic culture, the study attempted to clarify the pedagogical practices and the students' engagement and learning. The participants' reflections on those practices and the experiences provide the evidence base to define and recognize the academic culture (Brint, Cantwell, & Hanneman, 2008; Swanson, 2006). Recent research demonstrates the strength of qualitative design, particularly in providing an in-depth understanding of the context, and practical ways to promote student engagement (Chambers & Chiang, 2012).



#### **4.2.2. The Study Site**

The studied university is a large, public university in Ethiopia. Two different institutions amalgamated in 1999 to form this university. These two institutions are the then, Agriculture College (established in 1952) and the then Health Sciences institute (established in 1984). This university is fast growing, and now offers several programs in the undergraduate and graduate levels across seven colleges. In the academic year 2011/12, the university campus enrolment for the undergraduate programs reached a total of 18,161 students. Ninety-five percent of the fresh and senior undergraduates lived on campus. The proportion of women both in the undergraduate programs and among the academic members was minimal ranged between 10% to 20% (Ethiopian Federal Ministry of Education, 2012).

#### **4.2.3. Study Participants Selection**

Participants were predominantly from two purposively selected colleges of the studied university namely: College of Natural Sciences and College of Social Sciences and Law. The study participants included 20 students (8 Women & 12 Men) and 6 teachers (2 Women & 4 Men) representatives and gender focal persons at the college level, 2 College Deans and 2 Department Heads (Senior Managers), and 4 Education Quality Experts. A teacher representative is a selected academic member to delegate the academic staff at the college academic commission. Gender focal person is a female officer of the gender office at the college level who is responsible to coordinate and support female academic staff and students at the college level. A student representative is a selected member from a department to represent students of that department at the college level. In this study, “T” represents a teacher, “S” represents student, “SM” represents senior manager, and “EQE” represents educational quality expert.

The researcher conducted a Focus Group Discussion (FGD) with one group of teachers, and three FGDs with three groups of students’ representatives by major areas. The students groups include students’ representatives of: (a) the natural sciences major; (b) the social sciences major; and (c) the language studies major. In addition to this, the researcher interviewed two groups of senior managers: (a) college deans; and (b) department heads. Moreover, the researcher interviewed two groups of education quality experts: (a) Internal quality experts, who worked in the

institution quality assurance office; and (b) External quality experts, who worked in the national quality assurance agency, and Federal Ministry of Education.

#### **4.2.4. Data Collection**

The researcher used qualitative interviews and focus group discussions (FGDs) in order to solicit the relevant data from the study participants. The different interview and FGD items were organized into three major areas, pertaining to the ideal state of quality teaching and learning, the actual teaching and learning experiences, and student engagement. Items posed covering these three areas were similar in both data collection methods. While interview format was used to collect data from the college deans, department heads, and education quality experts, FGD was used to collect data from teachers and students. Each interview session ranged between 30 to 40 minutes and each FGD ranged between 90 to 120 minutes.

#### **4.2.5. Conceptual Framework for the Study**

A unified framework was applied that facilitated explorations of quality gaps based on comparisons of stakeholder' expectations and actual practice, analyses of mismatches between quality policies and practices according to Cartwright's (2007) empirical work that analysed the rhetoric and reality of quality. In this unified framework, the student learning experience and the teaching and learning process form the foundation for the evaluation of quality at the micro (individual) level of the higher education system, and the perspectives among the different stakeholder groups was examined.

### **4.3. Results and Discussion**

This study analysed the resulting transcripts using thematic analysis. The key purpose of this analysis is to generate the most salient themes integrating explanations of elements explored in-depth (Lincoln & Guba, 1985). To this end, the analysis started with an initial thinking about what to learn from the very first interview. Subsequently, there was a more systematic analysis with the researcher compiling and comparing field notes (Strauss & Corbin, 1998). In order to organize the data, the researcher read the data line-by-line and interpreted the meaning of each word, sentence, and idea (Creswell, 2009). Through a repeated process of summarizing and re-reading reports, overarching themes that characterized the studied institution emerged, at the same time, testing the constructions and

interpretations of tentative claims based on the collected evidence (Merriam, 2002). Finally, this study generated four working themes.

The first theme is about the attributes of desired qualities and the manifestations of actual qualities by the current teaching forces and undergraduate students. The second theme includes those classroom practices, as well as, institutional conditions associated with student engagement and learning. The third theme deals with the nature and extent of students learning experience during their undergraduate years. The fourth theme is about the related factors that influence student engagement and learning. In the subsequent sections, the results of the study and the corresponding discussion are presented.

#### **4.3.1. Attributes of Desired Qualities and the Realities in the Actual Practices**

This theme is about the perceptions of the study participants regarding the desired qualities of an ideal teacher and an ideal student. Also, it presents data to ensure whether or not these desired qualities were evident among teachers and undergraduate students. The information was categorized according to whether it pertained to teachers or students.

**4.3.1.1. Ideal qualities and actual profile of teachers.** Four sub-themes emerged from the analysis of the qualitative data, regarding desired qualities of a teacher. The sub-themes include subject area knowledge, personal attributes and dispositions, pedagogic practices, and professional accountability. These sub-themes are consistent with the literature in this field as it is common to find a list of diversified descriptors of teacher's quality, sometimes, as many as, twelve classifications (Harden & Crosby, 2000; Walker, 2008; Watson, Miller, Davis, & Carter, 2010). For example, a study identified nine characteristics that student participants considered reflecting effective college teaching: (1) student-centered; (2) knowledgeable about subject matter; (3) professional; (4) enthusiastic about teaching; (5) effective at communication; (6) accessible; (7) competent at instruction; (8) fair and respectful; and (9) provider of adequate performance feedback (Witcher et al., 2003).

##### ***Subject area competence (Academic knowledge & levels of attainment).***

Most study participants agreed that a teacher's subject matter knowledge is one important quality of a teacher. By way of saying subject matter knowledge, the

participants are referring to forms of academic capabilities pertaining to academic qualification, content knowledge, academic rank, and research undertaking. Subject matter knowledge has been rated as one of the characteristics of effective teachers (Walker, 2008; Witcher, et al., 2003). Research reveals that those teachers who have mastery of the subject matter they teach, are more confident and share a good deal of the subject matter for the students (Lumpkin, 2007).

***Personal qualities and dispositions.*** A teacher's personality characteristics are important in the definition of the ideal teacher (Thomas, 2000), and are included as one dimension of teacher's quality (Belanger & Longden, 2009). Most of the participants of the different groups commonly agreed that teacher's motivation and commitment to teach were important attributes of a good teacher. The other important aspects mentioned by the participant groups encompass the teacher's "sense of humour, concern for students', approachability, friendliness, and fairness." These descriptors can be considered as features related to a teacher's personality that define what could be called a 'psychologically balanced teacher' (quite, calm, self-controlled & balanced) (Thomas, 2000) and characteristics of interactive teachers that represents ability to connect with students, and having a sense of extreme concern and commitment for the success of students (Walls, Nardi, von Minden, & Hoffman, 2002; Watson, et al., 2010).

***Pedagogic practices (Academic practice - Teaching skills and practices).*** The study participants also valued a teacher's pedagogic practice as one of the essential qualities of a good teacher. This was explained in terms of the teacher's ability to present information clearly and intelligibly (S5 & S9, S12), knowledge of the theories of learning (T4), understanding student difference (T6), devising strategies to establish a fair and democratic classroom environment (SM1, EQE4, S1, S7, S18). Also, it includes a teacher's teaching and assessment methods (EQE1). Moreover, it includes an understanding of the context in which a teacher teaches and an understanding of his or her students (SM1). As one education quality expert described, without understanding the context for teaching and learning, it would be very difficult to facilitate students learning and promote the attainment of the learning objectives (EQE2). Emphasizing on the communality of subject area competence and pedagogical skills, an education quality expert (EQE1) described:

Let us see the qualities of a good teacher. The first thing is about the level of understanding of the subject matter the teacher has. Because you can teach if you know the subject, otherwise, it will be very difficult. This can be said in terms of their status and qualification. So the first thing is that, the teacher should have a sound knowledge about the subject matter. The other thing is about pedagogical skill. That teacher has to know how to deliver the contents to the students; really he or she has to know how to facilitate the students learning.

Another senior manager (SM1) added:

The teacher should relate with his students. Sometimes you know, some or all professors, they are very much competent and they know a lot, but when it comes to sharing that with their students or handling their students, they are not that related to their students. So they have to sense, their students' need. I remember a professor when I was studying for my undergraduate studies. I knew, he was a very prominent professor, but then when it comes to the way he was delivering the lectures, it was, I would say, beyond our capacity by then. So you need to understand the capacity of your students. You have to sense and relate to your students, if possible even, relate to each and every student.

In general, the teacher pedagogic practice explains the teacher's facilitation roles in the teaching and learning process (EQE4). When this skill complement well with subject area knowledge, the resulting quality attributes of a teacher increases.

**Professional accountability.** The participants also highlighted some features of professional accountability defining teacher quality, including his/her professional commitment, a sense of responsibility as a teacher, a sense of professional respect, meeting students and societal expectations as a teacher, concern for the high reputation of the department and the university at large, and meeting professional ethics. The overall desired qualities of a good teacher, as the participants suggested, encompass several attributes perhaps clustered around presentation of material, personal attributes, knowledge of theories and learning, and understanding how to apply and adjust theories according to the various contexts including class size and individual differences.

The student participants considered that the attributes of a good teacher as defined in this study were very limited in the existing teaching cohorts with deficits being evident in the current teaching forces in the defined areas of personal qualities

and dispositions, pedagogical practices, and professional accountability. Some senior managers (SM1 & SM2) and education quality experts (EQE3 & EQE4) supported the students' view that some teachers failed to be professionally accountable in engaging students in learning, failed to show concern for their students learning and practically did not provide time to support their students. In addition, most of the participants of this study reported that the current teaching forces in their corresponding colleges severely lacked essential pedagogical skills to engage students and stimulate students' interest in learning. For example, one of the education quality experts (EQE2) stated:

The university encourages active learning, in a sense, that students should actively participate in the teaching and learning process both within and outside the classroom. Even though it is stated in the university policy, the issue is that how far our teachers are experienced enough in developing activities and bring that to the classroom so that students will be actively participated. And the experience so far shows that still students participation in class is very limited because our teaching is still teacher-centered.

The other expert (EQE1) has a similar concern:

From the students' formal comments and from my own formal observations of teachers, I came to realize that teachers did provide assignments but they did not provide feedback to students on their performances. If teachers did not give feedback how did they know that their students were really learning well? Whether the activities they have performed were meaningful or not?

From the above point of discussion, it seems doubtful on the practicality of the stated policy intentions, as they seem failing to be actualized. As some participants of this study noted, there is still some deficit in the current teaching forces when it comes to issues of pedagogic practices, particularly in properly actualizing student-centered teaching and continues assessment strategies.

#### **4.3.1.2. Ideal qualities and the actual profile of undergraduate students.**

Four categories emerged from analysis of the qualitative data relating to the descriptions of qualities of a good learner. These categories were: developmental

and academic readiness; learning interest and commitment; current academic and ethical experiences and learning accountability.

***Developmental and academic readiness.*** The participants of this study agreed that a student needed to possess the required developmental and academic readiness to be successful in the courses. For this, one of the key qualities of a good student is motivation (T5 & S4). Unless a student is motivated, it would be very difficult to force him or her to learn (SM1). The other is learning interest, because without interest to learn, it would be very difficult to force them to learn (SM3, S1, & S2). But students will be interested in learning when they have the necessary background knowledge and academic competence (SM2, T4). As one education quality expert (EQE1) stated, "...in order to learn something students need to be prepared for that. So some prior knowledge, prior information, and prior experience are very important for them."

***Learning interest and commitment.*** The other important student quality was the learning interest and commitment. As most participants stated, this quality consisted of several attributes such as compatibility of disciplinary choice, overall attitude towards learning, enthusiasm, perseverance, commitment, and goal orientation. Most of the participants of this study commonly agreed that commitment is crucial for the attainment of learning objectives and to ensure courage for learning. While this is not adequate for meaningful learning, students should always inquire; they have to always ask both inside and outside the class to learn more. One senior manager (SM1) stated: "Unless students ask, they just learn very little. Especially, take class lecture, for instance, in the class students should frequently ask their professor." Thus curiosity is another important quality of a good learner.

***Current academic and ethical experiences.*** The study participants also valued the importance of a student's current academic success and ethical commitment as one important dimension of learner's quality. In relation to this component, they stated different sub-components to differentiate this quality. These are: level of academic performance, class attendance, respect for rules and regulations, respect for students and teachers, showing curiosity by asking questions, an interest in being challenged, seeking help, and demonstrating collegiality.

***Accountability for learning.*** The study participants described accountability for learning as one of the most important qualities of a good student. The participants

mentioned several components of this domain, including ability to take personal responsibility for learning as a student, knowing academic rights and responsibilities, demonstrating good behaviours, accepting societal responsibilities, tackling problems wisely, and sharing group responsibility, reflectiveness, and so forth. Evidently, the study participants observed great deficits in these attributes amongst the current undergraduate students in the studied context. More specifically, the teacher participants commonly agreed that the current student cohort failed to live up to the stated four major quality categories with deficits being particularly evident in academic preparation, learning interest and commitment, and taking individual responsibility. The other participant groups (senior managers and education quality experts) also shared similar views.

Of course, personal qualities can be developed through immersion in a culture that values them. For example, with an academic culture that values commitment and positive relationship, it is likely that students might be nurtured into becoming passionate and caring about academic work (Albanese, Snow, Skochelak, Huggett, & Farrell, 2003).

#### **4.3.2. The Conditions of Academic Engagement in the Ethiopian Higher Education Context**

The new higher education proclamation has defined the standards related to students' behaviour, teachers' rights and responsibilities and standards of classroom and assessment practices (Federal Democratic Republic of Ethiopia, 2009). The national proclamation has declared the centrality of students' independent learning and the attainment of problem solving, critical thinking, analysis and synthesis. Also it has stated learner-centered methods and continuous assessment strategies to be used across the undergraduate curricula. The same document has stipulated major responsibilities for teachers to make use of student-centered methods of instruction and continuous assessment strategies almost in every course. In keeping with this proclamation, Jimma University revised its Senate legislations (Jimma University, 2010) and developed new quality assurance guidelines that mandate the utilization of student-centered methods and continuous assessment across the different colleges of the institution (Jimma University, 2011a). These quality assurance guidelines involve detail information on how to apply student-centered methods and



continuous assessment strategies, the expected standard criteria as well as teacher's duties and responsibilities.

In spite of these good intentions, the implementation of these policies has fallen short according to the participants in this study. This suggests the impotency of the policy to actualize the required changes into academic practice. This represents one of the key concerns in introducing educational reform in developing countries as it is often considered too complex to implement (Chisholm & Leyendecker, 2008; Schweisfurth, 2011).

It is useful to explore further the issues of student-centeredness and continuous assessment policies and implementation from the perspective of the different stakeholders. SMs and EQEs considered policy making and communicating that policy to teachers as potentially having the power to change the academic practices in the studied colleges. They expressed optimism about the initial positive results achieved so far. Astonishingly, however, discussion with the students and teachers FGD participants on the same issues revealed flaws in the implementation aspects and the consequent negative results. Also stated was implementation constraints that stemmed from underlying assumptions, lack of accountability and a commitment for improved teaching and learning (EQE3 & EQE4). Furthermore, there was more uncertainty on the relevance of the students' learning experiences due to a lack of evidence as well as perceived shallow assessment (EQE1 & EQE2). This indicates the gap between policy and practice as well as diverging views of stakeholders on the same issue.

#### **4.3.3. Students' Engagement in the Ethiopian Higher Education Context**

The level of student engagement as revealed through the responses of most of the student participant groups was high with many of the students engaged in continuous assessment tasks, and regularly attended classes consisting of lectures and practical activities. Some senior managers and education quality experts partly concurred with this view attributing and explaining the level of engagement to the implementation of recent policies and practices. However, one of the education quality experts (EQE1) expressed concerns that the student engagement activities, perhaps disproportionately focussed upon meeting assessment requirements, thus the relevance of their engagement or the participation of students in meaningful educational experiences cannot be warranted.

In contrast to the dominant student view of the level of engagement, the participant teachers strongly disagreed with their perspective, arguing instead, that the students' were passive consumers of the curriculum with the dominant learning mode being mechanical rehearsing. As they strongly argued, even the best students who were high achievers in their courses fell short in demonstrating the qualities expected of good students. A consistent comment among some participants of the different groups was that, students rely heavily on material assistance like lecture notes and handouts and their mode of learning and studying was predominantly *mechanical rehearsing* or rote memorization. As such, it is evident that students were not engaged in higher-order thinking requiring students' to move beyond *mechanical rehearsing*.

While it is true that study skills are one essential ingredient for students' academic engagement in a rigorous and relevant academic experience, the students' low level of academic engagement could be attributed to other reasons. Research shows that students' difficulties with academic tasks often stem from their understanding of the nature of knowledge rather than from a lack of techniques (Wingate, 2006).

However, a further analysis of the qualitative data set indicated that there were some qualities the students exhibited that two senior managers and an education quality expert disclosed. While they did not deny the presence of students with low levels of academic engagement, these participants pointed out that some students actively participated in the different learning tasks, consistently looked for appropriate reference materials and came to class with relevant questions to solve. Such students usually identified problem areas in the course, communicated these to the teachers in class, creatively designed original research ideas for their senior essay, and conducted their studies successfully.

Regardless of these, however, most student participants commonly agreed that their academic engagement was constrained by several problems, including pressure experienced to cover content, meet continuous assessment tasks, and copy handouts. The other problems include a lack of positive relationships between the students and the teachers; feeling burdened due to a lack of carefully planned assessment tasks and well prepared handouts. Also, there was perception that marking and scoring were applied unfairly; and the experience of equal participation, particularly for female students being undermined.

To illustrate these points, let us see the following quotes taken from the participants. One student (S3) described that “Most teachers are not concerned for students learning rather they are more concerned on finishing course contents.” Student participants (S2 & S11), saw reading assignment very negatively. The first student (S2) said: “reading assignment seems targeted simply to make us busy.” The second student (S11) reveals: “Reading assignment often appears either in compensation to the missing classes or for the difficult chapters.”

Moreover, some education quality experts held the opinion that students exhibited low level of engagement due to superficial assessment and the students’ tendency to be test oriented. Others like EQE3 and EQE4 felt that students spent little time on their learning and study. Participants such as T1, T6, S1, EQE3, and EQE4, noted the students’ passivity in the instructional process. According to some participants (T2, EQE3, & EQE4), this is gauged by the poor quality of their interactions with teachers and among peers in the classroom. The poor quality of assignments and research reports, and the low level of cognitive activities in studying and learning where ‘mechanical rehearsing’ was predominantly used were also expressed as areas of concern.

Learners are the makers of meaning through their involvement in knowledge construction (Hennessy & Evans, 2006). Teaching predominantly entails facilitation through designing learning activities, and preparing tools and environments to encourage metacognition, self-regulation, critical analysis, synthesis, and reflection (Jones, 2008). However, when conditions are not suitable for these essential activities to occur due to various reasons as reported in the current study, low level of the students’ engagement seems inevitable. There are several factors contributing to the students’ low or minimal level of engagement, and the participants of this study reported five key factors affecting engagement.

#### **4.3.4. Factors Affecting Student Engagement in the Higher Education**

The study participants highlighted several positive and negative factors influencing student academic engagement that compete to promote and undermine quality improvement. When the different factors the participants of this study highlighted systematically organized, they fall under four major categories: personal factor, instructional factor, institutional factor, and systemic factor. In the discussions

below, these factors are highlighted, with examples provided from the participants' responses.

**Personal/individual factors.** Some participants disclosed the positive contributions of factors such as personal interest and commitment for learning, and teacher support and encouragement for students in the form of advice and informal feedback. However, other participants had the opinion that lack of concern and commitment for learning or inability to take responsibility for learning, social loafing, and failure to take responsibility for the students' engagement and learning (teacher scepticism) had strong negative influences on student academic engagement.

The findings of this study show contradictory views regarding the negative factors that contribute for students' dis-engagement, particularly between students and teachers. When the teachers and students participants were asked to identify the negative factors influencing students-disengagement, they responded quite differently. The teachers participants strongly argued that students' personal factors have contributed for their dis-engagement, student participants have the opinion that teacher and/or course related factors have the most influence. One of the teacher participants (T6) strongly argued:

Though I did not undertake research, most of the students are not considerate for their learning, be it in class or outside the class. In most cases, the students want to pass their exams and graduate by any means. What is important to them is to have their degree. They don't care for their learning. In the past, there were group works, for instance, in that probably a student or two will do the job and the rest of the group members would secure marks or grades without effort. Even sometimes, students of different groups copied assignments or term papers from one another. Copying works of each other during exam or in completing assignments is very common, so that with little effort the students would secure "C" or "B" (good grades) and then promoted. Therefore, they used whatever means, for example, cheating, tending to make assessments in groups, absence from exam and seeking make-up exams. Anyhow, through different means they cheat and then get their degree.

The other teacher participant (T2) stated that lack of interest for learning is the main problem.

For example, students do not want to do laboratory works, spent their time doing assignments and other relevant activities. Unless you forced them they did not pay

attention for their learning tasks. Generally students are more concerned to spend their time on the different techniques of cheating on exams rather than studying hard.

One Senior Managers (SM1) strengthened the above concern: “Some students do not want to put in extra effort. When you say you got to read this material, especially when the material is with a large volume, they don’t feel comfortable.” Also the students’ dis-engagement was attributed to lack of the required study skills. A teacher participant (T4) noted that students lack the required study skills to critically analyse and synthesize learning materials and to work independently as they commonly engage in mechanical rehearsing. Virtually all the teacher participants share this view. Contrary to this argument, the student participants have the opinion that the teacher and/or course related factors are the most influential for the students’ dis-engagement. Of course, that does not mean all teachers since there are teachers who teach very well, considering students ability and background. One student participant (S17) commented:

There is lack of good relationship with teachers. I mean, there is negative attitude of teachers for the students learning, for instance, a teacher said, you all have scored above 50 and even she has scored 51. Sometimes teachers prepare wrong exams like asking a simple rehearsing question by picking a word from the handout. The other includes dumping handouts from the internet and preparing unclear and voluminous handouts and distributing that towards the end of the semester may be after, make-up classes.

Another student participant (S2) described the following related with course materials, particularly materials in the library.

Some of the course materials are very few compared with the number of students who took the course in the college. Due to this, some students could not prefer to stay in the library, if those books were occupied by some other students. Sometimes, the reference books stated in the course outline could not appear in the library. For example, in a certain course (x), we often missed books in the college library that were stated in the course outline.

**Institutional Factors.** In reflecting on the institutional factors influencing student engagement at their respective colleges, the different participants of this

study, identified several structural, policy and practice elements affecting the overall learning experience of the students, and the quality of university teaching as well. While most of the student participants and interviewed senior managers capitalized on the 24 hours library service and considerable Information Communication Technology (ICT), and internet facilities as positive influences, teacher participants recognized staff development opportunities as positive factors. Similarly, the most recognized positive influence, in the opinion of interviewed senior managers and education quality experts, is policies and guidelines supporting improvement, and new initiatives. Regardless of these, the study participants highlighted some negative influences such as limited institutional support for implementation of new reform initiatives, the dominance of normative academic processes (lecture-based instruction) within the institution, and unfairness particularly, in marking and scoring.

**Systemic factors.** The term systemic factor refers to those concepts and ideas those participants pointed to regarding the education system and its overall influence on the teaching and learning. Senior managers and education quality experts highlighted the importance of current national initiatives in revising policies, and mandating reform and innovation via a higher education proclamation as positive influences. Also, student participants saw the purpose of their education as a matter of getting good grades and be graduated with high CGPA. To do so, they had to recite as many course information and write it in the tests and exams appearing for each course. Such a focus on grades rather than learning, on memorizing rather than understanding, could only strengthen superficial learning and a complete detachment of learning course content with other student outcomes like being self-confident in learning, and achieving higher-order learning skills. Regardless of this, virtually all teacher participants strongly argued on the systemic failure to promote students' academic engagement through rigorous and relevant activities, instead, the widespread of activities that encourage mechanical rehearsing across the education system. A repeated comment by most of the participants is a lack of students' competency at the time of entry due to underpreparing. A teacher participant (T4) argued in favour of this.

I think, the issue of engaging students has been a critical problem in our higher education context. In my opinion, this has its roots in our education system. For example, in the entire school system, there is an over reliance on spoon feeding

(lecturing) and recitation. Because beginning from primary education up to preparatory (Grade 11-12), the students learning experience is characterized by mechanical rehearsing, quite often, guided by the teacher and over relaying on teachers' notes. When it comes to higher education, the learning system totally changes. But students lack the necessary skills to adjust themselves to the existing situation. For instance, we expect them to learn independently, to write report and things like that. My question is do they have the required learning skills when they first join higher education? The answer is no. Therefore, most of the students are disengaged since they lack the necessary learning skills to cope with the existing realities of higher education in Ethiopia.

Student participants, on their part, highlighted that they expected teachers to lecture well, offer plenty of support, show them how to learn, and promote active learning. Also, they valued teachers who could provide them motivation and advice on how to study through varied approaches, and who interact with them in a positive way. However, the participant teachers pointed some of the reasons hindering them not to do so. Teachers often had some challenging teaching conditions—large class size, too much course load per semester, and many student advisees—and had to meet these challenges with minimal or fewer staff development opportunities. One teacher noted:

I'm not encouraged to participate in any professional development. I know there are some going on within the institution, but I've never been participated because that it's exclusively for the new academic staff members. I just do not understand why I am supposed to teach courses and advice students well when I received no support to do so?

Based on the above points of discussion, it is possible to conclude that the studied higher education system needs a special focus on the students' learning, further than the prevailing superficial learning. Attaining this is possible when the education system has taken students learning more seriously. Research shows that students will learn more when the education system cultivates academic cultures that encourage students to take advantage of a variety of educational opportunities (Kuh, et al., 2005). Thus, re-thinking the education system and looking for other alternative solutions need serious concern and immediate response.

Technical inadequacies in students' study skills, as well as, the teachers' failures to create more stimulating and supportive learning environments are the

"symptoms" that appear on the surface. Rather, the "causes" extend to "systemic" failures to develop the required skills, institutional negligence to address the students' skills deficiencies, and lack of commitments to support teachers' promoting higher-order thinking. Most of the study participants agreed that question to consider remains how far the system has progressed in terms of fostering students' ethical behaviour, promoting teachers' motivation and accountability, fulfilling the necessary learning resources and facility supports. Thus, the students' low level of engagement and the deficit in the quality attributes of the teaching forces and the students might be due to institutional and systemic factors than individual factors. Under this circumstance, blaming individuals merely masks the most critical issue, which is the "underlying assumption" governing implementation of instructional practices within the education system. In this system, learning equates to a simplistic notion of "rote memorization", and "instruction" is erroneously equating to "transfer of information".

Therefore, a change in assumption underlying teaching and learning is required; if transformation is to occur incorporating a different notion of the student engagement. While this different notion centres on the students accepting greater accountability and autonomy for learning (Fulton, 2009), promotion of self-regulated learning appears critical (Brint, et al., 2008).

The student participants had high expectations of their teachers, but these expectations did not seem to match the expectations that they have of themselves, nor did they recognise the need to become independent learners. Similarly, teachers appear to have high expectations of students, but these expectations did not seem compatible with the expectation they have of themselves, nor do teachers overtly recognize the very facilitation roles they are supposed to play to help students become more engaged and more critical. These expectation paradoxes illuminate a sort of "blame the other type of attitude" student and teacher participants had for one another. Regardless of this, the other stakeholders perceived that the students and the teachers are not as expected of them to be. It is suggested that the responsibility for this lies on the teachers to create opportunity for the student to engage in activity that is more likely to facilitate significant learning, there is also a need for students to recognise their role in this process.

**Historical and sociocultural factors.** These refer to the trends of higher education since the beginning and the social environment representing the family and social structures, and the political and sociocultural realities of the country



(Tabulawa, 1997; Trowler, et al., 2005). We briefly reviewed the available literature to find out supporting evidence that substantiate our results. Here, the focus was on two major issues including, the historical trends of higher education teaching and the sociocultural realities of Ethiopia. Based on review it became clear that, a teacher-centered model of teaching has been persistent in the higher education in Ethiopia, since its inception in the early 1950s (Desta, 2004; Fisher & Swindells, 1998; Piper, 2009; Wondimu, 2003). Moreover, some family-structures that undermine and disempower children were identified as endemic authoritarian structures extend to consider children as lower status individuals in the family structure (Wondimu, 2008). Thus, passive responses may be due to several reasons that impact upon the teachers, the students, the social norms, and the institution itself.

Research shows that institution-wide policies and practices that cultivate student engagement values, behavioural habits, and skills are at the core of high levels of student engagement (Kuh, 2009; Umbach & Kuh, 2004). However, improving student engagement level and building a culture of evidence is not easy as this requires persistent effort and staff collaboration (Swanson, 2006; Zepke & Leach, 2010).

#### **4.4. Implications**

Quality improvement needs deep commitment to student learning, raising important issues, and encouraging thoughtful discussion. A critical analysis of the qualities of a good teacher, as presented in this paper, provides an understanding of the different views of the teaching functions. Systematically identifying and organizing the qualities of a good teacher helps to provide useful guidelines to policy makers and practitioners to make crucial decisions related to the improvement of teaching. Similarly, describing the qualities of a good student and systematically categorizing offer useful guidelines for students to become better students. Further, recognizing the identified learning qualities, teachers develop their knowledge so that they may be in a better position to understand the dimensionalities of being a good student.

Quality improvement initiative needs several considerations including engagement of students with the relevant learning experiences, while at the same time, creating a context for cooperation and reflection. These inform the quality improvement effort by highlighting those strategies needed to foster academic engagement for deeper understanding. However, this is not sufficient; and this

ongoing research is under progress to further examine the quality using a standard quantitative scale, and further construct pilot research-based tools for evaluating the learning process and the outcomes.

#### **4.5. Conclusions**

In the views of the participants in this study, a good teacher needs to demonstrate a range of quality attributes, including, at the simplest level, effective presentation skills, and at the highest level an understanding of the complex nature of teaching and learning in the prevailing context. Similarly, it is suggested by the participants that good students, are characterized by several quality attributes that tap into the cognitive, social, ethical and practical dimensions. Unfortunately, most of the desired quality attributes of the teacher and the learner have not been evident in the current teaching forces and undergraduate students, respectively. The study participants highlighted quality deficits in several domains, the major ones being the following:

1. A mismatch between policy and practice;
2. A deficit in the desired personal attributes of quality and the corresponding qualities demonstrated by teachers and students;
3. Incongruity between expected levels of accountability and the level of accountability demonstrated by the students and teachers;
4. Misalignment between student learning experience and student learning assessment;
5. Disparity between the academic preparations and learning opportunities before college and changed academic practices (more independent learning) during college years, and
6. A lack of coherence between the skills of mechanical rehearsing developed in previous years before College and the generic skills expected to be demonstrated during College years.

The findings of this study show that the culture of students' academic engagement is currently strongly associated with an agenda of passing exams and obtaining degrees. Individual skill deficiency as the chief explanation for problems of academic engagement has been negative and reductive with failures being attributed to the skill deficiencies of individuals. However, there are some diverging views between teachers and students in matters relating to the factors associated to

students' engagement in higher education. Also, there are differences between senior managers and education quality experts aligned against teachers and students in matters related to the current reform initiatives and the resultant effects on implementation.

As the findings indicated, the barrier that prevented the studied higher education from providing all students with rigorous and relevant experiences is the low level of student engagement. The intense focus on meeting the demands of continuous assessment and examination requirements, coupled with, the lack of active learning opportunities resulted in, greater increases in the number of students with low level of engagement. In addition, the students' lack of competency at the time of entry, their poor personal motives and commitments, and failure to shoulder accountability for learning have intensified the problem.

Other factors associated with the low level of students' academic engagement are the lack of desired teaching qualities of the current teaching forces, poor institutional support, particularly in the areas of implementation, the inability of the education system to prepare students to cope with new challenges of college learning and study. Complicating all these problem areas are the sociocultural realities of the country at large. Therefore, the question still remains: How is it possible to narrow down the unforeseen quality gaps, to use the phrase from the title of this article, "the hidden lacunae" in a manner that is relevant and easy to implement, yet still promote teachers using progressive, reform-minded pedagogical approaches.

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## **Chapter Five: The Development and Validation of the Student Engagement Scale in Ethiopian University Context**

### **Abstract**

This study explored the factor structure and convergent and discriminant validity of the student engagement scale administered to samples of students ( $N=536$ ) at a large public university in Ethiopia. A modified version of the Australasian Survey of Student Engagement (AUSSE) scale was prepared and used. The participants' responses to the different 'engagement' questions were subjected to a principal component factor (PCF) analysis using the stata 12 data analysis and statistical software package. The PCF analysis was used for exploration of possible factors of extraction, and the identification of loading and other psychometric problems. In addition, the study assessed the quality of the undergraduate education through examining the level of student learning experience across the extracted dimensions of engagement. Through this analysis, a 9 factor solution comprising of 38 variables accounted for 56.93% of the total variance explained. Both at the item and structural levels of analyses, the findings in this article revealed that an inter-correlated 9-factor solution is a valid representation of the student engagement construct. The 9 factor solution for the student engagement scale is consistent with earlier factor structures, particularly reported for a single institution study. In general, instructional (pedagogic) and interactive factors represented relatively larger proportion (69%) of the variance explained. The descriptive statistics also showed that the percentage mean scores of the different dimensions ranges from ( $M = 2.35 - 2.92$ ), 59% to 73% indicating modest levels of engagement. The specifications of the 9 factor structure, and its convergent validity and discriminate validity are discussed. Implications of the research findings and suggestions for improved use of student engagement scale are provided.

**Keywords:** confirmatory factor analysis, Ethiopia, higher education, student engagement



### 5.1. Introduction

Assessing quality in higher education is important in providing significant and decisive information pertaining higher education provision. Despite enduring challenges associated with the complex nature of quality, the dimensions of higher education quality need to be identified and validated to perform appropriate and meaningful quality measurement (John & Sukhen, 2002). Several approaches have been proposed to measure quality in higher education, of them, quality assurance and university ranking approaches have become supra-national issues (Federkeil, 2008; Law, 2010). However, these approaches have been challenged for their biased dimensionality emphasizing institutional inputs and reputation as opposed to educational processes (Pascarella, 2001; Tambi, et al., 2008), and methodological flaws (Bookstein, et al., 2010). Moreover, these approaches lack theoretically justified frames and empirically-grounded evidence for the selected quality dimensions (Harvey, 2008b; Kahu, 2011).

Over the years, numerous studies of the higher education have emphasized these weaknesses and proposed different sets of dimensions to measure higher education quality. One of the most salient recommendations of the different studies predominantly focuses on student engagement as a centre piece of higher education quality (Coates, 2005, 2006; Krause, 2005; Kuh, 2001, 2008). This student engagement-based quality assessment in higher education has been implemented in the North America since 1999, and over the last decade or so; it has spread over other higher education systems around the globe (Coates, 2008; Zepke & Leach, 2010). Despite growing interests and national efforts to use student engagement data to establish a culture of evidence-based research, factor analysis studies on the student engagement construct are not readily available internationally (Hagel, Carr, & Devlin, 2012; Strydom, Mentz, & Kuh, 2010). The limited studies on this construct based on a single institution data are inconclusive about the factor structure (Gordon, Ludlum, & Hoey, 2008; LaNasa, Cabrera, & Trangsrud, 2009; Lutz & Culver, 2010; Tendhar, Culver, & Burge, 2013).

#### 5.1.1. Study Objectives and Research Questions

The present study was conducted to serve both exploratory as well as confirmatory functions. The exploratory component is that the analysis focused on the observed variables as a basis for the analysis (Kim, 1979), but at the same time,

it has a confirming approach as it looks at comparing earlier structure patterns as a basis for the proper identification of meaningful clusters of variables (Byrne, 1994). This approach is consistent with Pike's (2006) recommendation for a single institution study to identify a substantive scale that is meaningful for the institution. Although factor analysis is most directly relevant for evaluating a scale's internal structure, it also provides information about a scale's internal consistency, and it can be used to evaluate convergent and discriminant validity evidence. Thus, the objective is to identify the dimensions explaining the data for the university under investigation. Also, it assesses the state of quality. More specifically, this study will answer the following research questions.

1. Do the variables used in the student engagement scale of the data collected from a university in Ethiopia demonstrate evidence of construct validity?
2. What factor structure represented the student engagement scale? And what proportion of the total variance is explained by the extracted factors?
3. What is the extent of quality as measured by the students' engagement level across the different dimensions?

## **5.2. Method**

In this section, relevant methodological issues will be discussed. Topics include the scale and its measures, study participants, the validation approaches, producers, and pre-analysis considerations.

### **5.3. The Student Engagement Scale**

The student engagement scale was first developed in North America by George Kuh and colleagues (2001) and adapted in Australasia since 2007 under the title of "Australasian Survey of Student Engagement (AUSSE)" (Coates, 2008). The scale utilizes an analytic rating system to measure engagement of the students' in effective educational practices through six different benchmarks (Coates, 2010). The AUSSE (2009) version of the scale was used to collect information on around 100 specific learning activities and conditions along with information on individual demographics and educational contexts. The scale contains items that map onto six student engagement benchmarks:

- **Academic Challenge** - the extent to which academic expectations, activities, and assessment tasks challenge students to learn;
- **Active Learning** - students' efforts to actively construct knowledge;
- **Student and Staff Interactions** - the level and nature of students' contact and interaction with teaching staff;
- **Enriching Educational Experiences** - students' participation in broadening educational activities;
- **Supportive Learning Environment** - students' feelings of support within the university community; and
- **Work Integrated Learning** - integration of employment-focused work experiences into study.

The five benchmarks measured in this research are active and collaborative learning, student-teacher interaction, academic challenge, enriching educational experiences, and supportive learning environment. The scale items have been developed by adapting mainly essential constructs of student engagement used in the AUSSE (2009) scale and locally used scales used in earlier studies (Tadesse, 2006; Tadesse, Asmamaw, et al., 2012).

### 5.2.2. Measures

Student engagement was assessed using sub-scales through which participants were asked to think about their experience during their college years as they read each statement and indicate how true each statement was for them. Active and collaborative learning, integrative and reflective learning, student-teacher interaction, and enriching educational experience items began with, "In your experience at your college during the current academic year, about how frequently you have done each of the following?" Their responses were scaled 1 (Never) to 4 (*Very often*). Levels of academic challenge in course items began with, "During the current academic year to what extent your coursework emphasized the following intellectual activities?" and were scaled 1 (*Very little*) to 4 (*Very much*). Reading and writing items began with, "During the current academic year, about how much reading and writing have you done for each of the following category?" and was scaled 1 (*None*) to 4 (*More than 6*). Supportive campus environment items began with, "To what extent does your college emphasize each of the following?" and were

scaled 1 (*Poor*) to 4 (*Very Good*). Interpersonal relation items began with, “In your opinion, how do you rate the quality of your relationship with people?” and were scaled 1 (*Poor*) to 4 (*Very Good*). The remaining learning assessment challenges items began with ‘Based on your experience in the current academic year, how do you rate the quality of your learning assessments?’ and were scaled 1 (*Very little*) to 4 (*Very much*). Appendix A presents the student engagement scales.

### 5.2.3. Participants

Participants were volunteers recruited from the student population in the college of Natural Sciences and college of Social Sciences and Law at a large public university in Ethiopia. All participants were domestic students who had signed written consent forms verifying their willingness to participate. A total of 596 survey responses were collected and this represented a 96% response rate. Returned surveys were excluded from analysis if they met one or more of the following exclusion criteria: Participants did not respond to two-third of the survey-questions; or did not include some background information about his/her college, gender, age, or Cumulative Grade Point Average (CGPA). After exclusions, there were 536 respondents used in the analysis. Table 1 presents summary of the participants’ characteristics as a percentage of the sample across colleges.

Table 1. *Individual and entry characteristics of participants across colleges (N = 536)*

Characteristic	College Natural Sciences 206 (38.4%)	College Social Sciences and Law 330 (61.6%)
Gender		
Women	37 (18%)	70 (21%)
Men	165 (82%)	260 (81%)
Classification		
Year II	111 (54%)	115 (35%)
Year III	95 (46%)	176 (53%)
Year IV & V	0	39 (12%)
Age	$M = 21.33$ ( $SD = 1.35$ )	$M = 21.51$ ( $SD = 1.35$ )
CGPA <sup>1</sup>	$M = 2.90$ ( $SD = .46$ )	$M = 3.05$ ( $SD = .47$ )

Note. <sup>1</sup>Cummulative Grade Point Average

Five hundred thirty-six (107 females & 429 males) undergraduate students participated in the study, of them, 206 were in the college of Natural Sciences and 330 of which were in the College of Social Sciences and Law. The sample participants’ gender composition reflects that the proportion of males is far greater,

accounting for over 80% of the samples across colleges. The mean ages of student samples in the two colleges were similar, but there is a significant mean difference in students' CGPA indicating variation in the later between the two colleges.

#### **5.2.4. Procedure**

The study received ethical approval from an ethics committee in the School of Education at a university in Australia. The first author collected the data after having received formal permission to adapt and use the student engagement survey for the research purposes from one of the Australian Research Council officials in Australia. After that the validity of the draft instrument was tested by two higher experts in measurement and evaluation both from the Australian and Ethiopian universities. The two experts checked whether all the items included in the scale are related to the different components of the student engagement scale. Also, they assessed whether the study objectives are matching with the contents of the engagement scale. For this, the researcher made available for the experts the research objectives and questions, along with, the engagement survey scale. Besides, they have looked over the engagement scale items for troublesome wording, or other difficulties.

In each class, the corresponding author has explained general information about the study and asked participants to consent to participate. Participation was voluntary and students who did not wish to participate were free to leave the classroom. Those who remained were asked to read and sign an informed consent form. After all of the consent forms were signed and collected, the survey was distributed. Students were free either to fill in the scale during class-time and return it immediately, or fill it in later and submit to their class representatives. The scale was anonymous; so that a student participant's personal identification was not included as everyone was informed not to write his/her name or other personal identifier.

#### **5.2.5. Multidimensional Validation**

Both qualitative and quantitative procedures were used to validate the scale before utilizing it in Ethiopia. Validations were conducted based on the multidimensional validation work built on the approach suggested by Griffin et al. (2003) and Coates (2006) including 'experts review (both in Australia & Ethiopia), pilot testing and review, reliability analyses, and confirmatory factor analyses and correlation analysis. The qualitative analyses were used to refine item wording,

maintain standards, and assess the appropriateness of the scale (Coates, 2006; Krause & Coates, 2008). The quantitative analysis established the factor structure and helped to ensure that the scale measured the intended target constructs with acceptable levels of bias and precision (Coates, 2010; Griffin, Coates, McInnis, & James, 2003).

In the process of scale preparation, consideration was given to identify and include variables that fit well with the special circumstances of the studied institution. As a matter of fact, items used to measure engagement in co-curricular activities' and 'Work Integrated Learning' was not used. Hence, five factors and the corresponding measurement variables were included in the modified student engagement scale. In this modified engagement survey items under the components of "reading and writing," "academic challenge," and a few items in the active and collaborative learning were framed in such a way to be more suitable for the Ethiopian higher education context. This was achieved through providing more content in these dimensions in relation to the prevailing realities.

The phrasing of some items was modified as per the contextual difference. For example, an item that states "discussed in class" deliberately did not include "electronic discussion" to fit with the contextual realities of the studied context. Similarly, items used to measure aspects of academic challenge and reading and writing were phrased in a manner to represent local contexts. Through these components, students were asked to measure the extent to which they have experienced appropriate assessment tasks in tests and quizzes, assignments, mid-examination, and final examination and whether or not they have been involved in reading and writing activities for academic purposes. With the intention to make things more suitable to the learning circumstance of the students, volume of writing was expressed both in words limit as well as in the corresponding approximate page limit.

Using 'principal component factor analysis, the factor loadings of the 47 items and their corresponding reliability statistics were computed to determine the item properties and decide on the inclusion of the items. While a total of 47 items were used to measure student engagement in the study, 38 were used for Confirmatory Factor Analysis. The modified contents are presented in Appendix A. Thus the modified version of the engagement scale used in the present study was composed of 47 items of student engagement. Moreover, Part I consists of eight items seeking

general demographic information about the participants such as age, gender, department, college attained, years of attending college, the residential status and the recent CGPA.

### **5.2.6. Pre-analysis**

Missing values were managed by excluding them from the analysis. Originally, a total of 596 responses were collected. However, 60 (10%) of the respondents were removed from the analysis due to excessive information loss or incompleteness of information and few outliers in age category. Thus, the final sample consisted of 536 students' responses. Regardless of this, there were few random missing values across the scales. With the intention to measure the internal consistency of the items used in the scale, a reliability test was conducted. The overall internal consistency of items used in the student engagement scale assessed with Cronbach alpha was ( $\alpha = .92$ ). This reliability coefficient is a high value for sample-based research (Streiner & Norman, 2003).

## **5.3. Results**

### **5.3.1. Exploration of Factor Structures**

A Principal Component Factor (PCF) analysis method has been applied to explore the dimensions of the measured variables and how they spread across the different structures (Hotelling, 1933). Stata 12 statistical analysis and software package was used (Cleves, 2008). The factor structure is examined through the correlation patterns in the factor rotation matrix. The Kaiser-Meyer-Olkin measure (Kaiser, 1974) verified the sampling adequacy for the analysis ( $KMO = .90$ ). Bartlett's test of sphericity,  $\chi^2 (703) = 6483.90$ ,  $p < .001$ , indicated that correlations between items were sufficiently large for a PCF. An initial analysis was run to obtain eigenvalues for each component in the data; and two measured variables (one from the Active and Collaborative Learning dimension, that is, 'acl6' and another one from Enriching Educational Experience dimension, that is, 'eee6' were dropped due to cross loadings  $> .32$  on different components. Moreover, one factor consisting of three variables (one from Active and Collaborative Learning dimension and the other two from Enriching Learning Experience) were dropped due to incompatibility of the items and lack of meaning. Similarly, the Kaiser criterion suggest that those factors with Eigen values equal or higher than 1 should be retained, however, for a factor to

be retained in the model, it needs at least three items (measure variables), regardless of its eigenvalue (Joreskog & Sorbom, 1993). Thus, one factor related to 'assessment task' and another factor related to 'reading and writing' was dropped from the model due to fewer than three items measured, regardless of its eigenvalue. The other 9-factors consisting of 38 items satisfy the Kaiser Rule, that is, inclusion of three and above items and meaningfulness with earlier factor structures, were retained for subsequent analysis. The 38 items were computed using the regression method and saved as standardized scores with a mean of zero and a standard deviation of one. These nine factors explained 56.93% of the total variance. Table 2 shows the factor loadings, the common variance (communality) and unique variances after rotation and flag (in bold) values above a criterion level of .40 for the factor loading.



Table 2. *The Factor Loadings (Pattern Matrix), Community and Unique Variance for the Student Engagement Survey, N=517.*

Var.	F1	F2	F3	F4	F5	F6	F7	F8	F9	Community	Uniqueness
ci1	.02	.16	.42	<b>.63</b>	.05	.02	.09	.06	.06	.61	.39
ci2	.17	.10	.16	<b>.70</b>	.04	.09	.05	.25	.09	.64	.36
ci3	.11	.05	.07	<b>.67</b>	.03	.19	.17	-.02	.17	.56	.44
ci4	.36	.09	-.01	<b>.49</b>	-.03	-.01	.24	.06	-.01	.44	.56
icl1	<b>.45</b>	.12	.13	.31	.04	.02	.14	.11	.04	.37	.63
icl2	<b>.49</b>	.12	.27	.13	.16	.01	.04	.08	-.01	.38	.62
icl3	<b>.56</b>	.28	.16	.12	.08	.22	.11	.00	.05	.49	.51
icl4	<b>.46</b>	.21	.21	.30	.09	.12	.22	-.03	-.02	.46	.54
icl5	<b>.57</b>	.25	-.06	.21	.04	.06	.10	.18	.14	.50	.50
icl6	<b>.55</b>	.08	.17	.18	.11	.08	.12	.06	.17	.44	.56
icl7	<b>.59</b>	.16	.14	.03	.06	.09	.14	.08	.14	.46	.54
icl8	<b>.51</b>	.26	.10	.13	-.06	.12	.14	.06	-.06	.40	.60
icl9	<b>.56</b>	.28	.01	.01	.06	.08	.12	.14	.05	.44	.56
sti1	.24	.05	<b>.64</b>	.14	.11	.14	.14	.17	-.03	.57	.43
sti2	.13	.02	<b>.72</b>	.15	.03	.11	.20	.23	.07	.67	.33
sti3	.07	.16	<b>.61</b>	.14	.02	.27	.12	.03	.19	.55	.45
sti4	-.02	.22	<b>.70</b>	.05	.00	.13	.20	.09	.02	.61	.39
acha1	.24	<b>.55</b>	.02	.35	.13	.09	.13	.08	-.10	.54	.46
acha2	.14	<b>.49</b>	.03	.37	.16	.15	.21	-.02	-.06	.49	.51
acha3	.20	<b>.65</b>	.13	.13	.04	.21	.16	-.11	.04	.59	.41
acha4	.14	<b>.75</b>	.14	.02	.02	.01	.07	.10	.13	.63	.37
acha5	.17	<b>.69</b>	.11	.04	.07	.03	.09	.19	.13	.58	.42
at1	.19	.02	.08	.11	<b>.65</b>	.13	-.09	.11	-.01	.51	.49
at2	.10	.14	.01	-.05	<b>.68</b>	.14	.11	.07	.03	.53	.47
at3	-.02	.01	.07	.06	<b>.78</b>	.04	.09	.04	.04	.63	.37
at4	.00	.05	-.01	.02	<b>.80</b>	.04	.07	.06	.12	.66	.34
rw3	-.03	.17	.14	.08	.09	.17	.03	-.17	<b>.69</b>	.60	.40
rw4	.10	-.01	.05	.05	.05	.04	.01	.11	<b>.83</b>	.72	.28
rw5	.10	.13	-.03	.11	.08	-.03	.26	.14	<b>.62</b>	.52	.48
sce1	.07	.10	.06	.13	.13	<b>.68</b>	.15	.25	.00	.60	.40
sce2	.05	.02	.19	.09	.07	<b>.81</b>	.11	.05	.07	.73	.27
sce3	.12	.11	.11	.03	.08	<b>.79</b>	.11	.26	.06	.75	.25
ipr1	.09	.14	-.07	.30	.17	.13	.06	<b>.68</b>	.00	.63	.37
ipr2	.09	.05	.28	.01	.07	.27	.08	<b>.73</b>	.01	.71	.29
ipr3	.06	.02	.29	.03	.06	.24	.12	<b>.68</b>	.11	.63	.37
eee1	.10	.09	.18	.11	.07	.14	<b>.80</b>	.05	.08	.74	.26
eee2	.10	.10	.14	.11	.08	.12	<b>.84</b>	.08	.03	.79	.21
eee3	.16	.20	.26	.00	.01	.08	<b>.49</b>	.21	.15	.45	.55

Note: 'Community' demonstrates the proportion of variance explained by a variable and commonly shared with other measure variables in the same factor common space.

'Uniqueness' represents the residual variance of a specific measure variable.

It is clear from Table 2 shows that each factor in the student engagement scale is represented with variables having moderately high factor loading values (.60 - .80). The structure coefficients are the factor loading values. For example, the structure coefficient of variable 'ci1' that represents 'participating in class discussion' is .63. While the commonality of this variable with the other variables clustered in the same factor (Factor1) is .61, its uniqueness which is simply calculated by deducting the commonality from the possible total of one is .39. This implies that, variable ci1 had a relatively high structure coefficient commonly shared with other variables in the same

factor. As shown in Table 3, no item had a factor loading below the recommended level of .40. However, the second to last column, most of the variables had relatively higher proportion of common variance accounted for each variable in the scale. This is indicative of the parsimonious nature of most of the variables representing the scale.

Also, Table 3 shows that the factors related to instruction and academic interactivity accounted for the larger proportion of the variances accounted for the scale. These factors are named as ‘instructional (pedagogic) and interactive factors’ had six sub-components (Factor1, Factor2, Factor3, Factor4, Factor5, and Factor9) together accounted for the 69% of the total variance explained for the scale. The remaining 31% of the variance explained for the scale accounted for the other 3 “relationship and support-related factors.” The psychometric property of the scale at the item level is presented in appendix 1. As presented in Table A1, the variables used in the student engagement scale had sound psychometric properties. The mean score for the variables ranges between  $M = 2.04$  (51%),  $SD = 0.98$  and  $M = 3.15$  (88%),  $SD = 0.79$ , and a grand mean of  $M = 2.76$  (69%),  $SD = 0.89$ . The factor structure and the reliability scores are presented in table 3.

Table 3. *The Factor Structure and Reliability Scores for the Student Engagement Scale (N=517).*

Factor	Variance	Proportion	Cumulative	Reliability ( $\alpha$ )
<sup>1</sup> Factor1	3.08	0.08	0.0810	.81
<sup>2</sup> Factor2	2.69	0.07	0.1517	.77
<sup>3</sup> Factor3	2.66	0.07	0.2217	.78
<sup>4</sup> Factor4	2.41	0.06	0.2850	.71
<sup>5</sup> Factor5	2.35	0.06	0.3470	.74
<sup>6</sup> Factor6	2.35	0.06	0.4087	.78
<sup>7</sup> Factor7	2.24	0.06	0.4676	.74
<sup>8</sup> Factor8	2.04	0.05	0.5212	.73
<sup>9</sup> Factor9	1.83	0.05	0.5693	.63

*Note.* <sup>1</sup>Integrative and collaborative learning, <sup>2</sup>Academic challenge, <sup>3</sup>Student-teacher interaction, <sup>4</sup>Classroom interaction and collaboration, <sup>5</sup>Assessment task, <sup>6</sup>Supportive campus environment, <sup>7</sup>Enriching educational experience, <sup>8</sup>Interpersonal relation, <sup>9</sup>Reading and writing.

Table 3 shows that the variance accounted for each factor is high. Almost all the correlation coefficients between the variables within each factor are high ( $\alpha = .70$  and above). This testifies that the degree of relationship is larger than the degree of lack of relationships within a factor (Acock, 2010), and that it takes to account the 50 percent and above of the variance for each factor. The only factor with the correlation coefficient below the standard threshold of .70 is the 'Reading and writing' with a correlation coefficient of .63. In general, the Cronbach's alpha values showed that there was generally strong consistency in the underlying 9-factors. Also, Table 3 shows that the factors related to instruction and academic interactivity accounted for the larger proportion of the variances accounted for the scale. These factors are named as "instructional (pedagogic) and interactive factors" had six sub-components (Factor1, Factor2, Factor3, Factor4, Factor5, and Factor9) together accounted for the 69.4% of the total variance explained for the scale. The remaining 30.6% of the variance explained for the scale accounted for the other 3 "relationship and support-related factors."

### 5.3.2. Interrelatedness of the Extracted Component Factors

The relationships between the extracted factors indicate the level of associations between the different factors. These data could help to measure the level of interrelatedness of the factors used to measure the scale. Table 4 presents the summary of the descriptive statistics and correlation analysis.

Table 4. *Descriptive statistics and correlations matrix for student engagement factors (N=514)*

Item	M	M%	SD	1	2	3	4	5	6	7	8	9
1. <i>Icl</i>	2.92	73	0.80									
2. <i>Acha</i>	2.92	73	0.79	.80*								
3. <i>Sti</i>	2.35	59	0.86	.57*	.48*							
4. <i>Ci</i>	2.77	69	0.86	.70*	.61*	.60*						
5. <i>At</i>	2.86	72	0.92	.30*	.30*	.22*	.22*					
6. <i>Sce</i>	2.50	63	1	.45*	.42*	.53*	.40*	.32*				
7. <i>Eee</i>	2.63	66	0.94	.55*	.51*	.58*	.49*	.24*	.44*			
8. <i>Ipr</i>	2.80	70	0.94	.43*	.33*	.59*	.43*	.29*	.62*	.39*		
9. <i>Rw</i>	2.81	70	0.95	.35*	.31*	.32*	.34*	.25*	.25*	.32*	.23*	

Notes: <sup>1</sup>Integrative and collaborative learning, <sup>2</sup>Academic challenge, <sup>3</sup>Student-teacher interaction, <sup>4</sup>Classroom interaction and collaboration, <sup>5</sup>Assessment task, <sup>6</sup>Supportive campus environment, <sup>7</sup>Enriching educational experience, <sup>8</sup>Interpersonal relation, <sup>9</sup>Reading and writing.

\*Correlation is significant at the 0.001 level (2-tailed).

The mean scores of the nine factors of student engagement ranged between 2.35 (59%) and 2.92 (73%) on a four-point scale, indicating that on the average the respondents' had modest engagement scores across the measured nine dimensions. A closer examination of the findings indicated that, four components had relatively lower scores with the mean percentage values below 70%. These include: Student-teacher interaction ( $M = 2.35$ , 59%,  $SD = 0.86$ ), supportive campus environment ( $M = 2.50$ , 63%,  $SD = 1.00$ ), enriching educational experience ( $M = 2.63$ , 66%,  $SD = 0.79$ ), and classroom interaction ( $M = 2.77$ , 69%,  $SD = 0.80$ ).

As shown in Table 4, the different engagement factors correlate with each other with varying degree of magnitude. For example, the students integrative learning and out-of-class collaboration (Icl) is significantly positively correlated with the level of academic challenge in courses,  $r = .80$ , however, the correlation between in-class interaction (Ci) and Assessment task (At) is significantly positive but comparably low,  $r = .22$ . There was a significant positive relationship between the students in-class interaction and their integrative learning and out-of-class collaboration (Icl),  $r = .70$ , academic challenge (Acha),  $r = .61$ , and student-teacher interaction,  $r = .60$ . Students perception of supportive campus environment was significantly positively correlated with their interpersonal relationships,  $r = .62$ , and student-teacher interaction (Sti),  $r = .53$ ; and integrative learning and out-of-class collaboration (Icl),  $r = .45$ . Interpersonal relationship (Ipr) was also significantly positively correlated with student-teacher interaction (Sti),  $r = .59$ . Students' integrative learning and out-of-class collaboration (Icl) was significantly positively related to students perceived appropriateness of the assessment task (At),  $r = .30$ . Academic challenge in courses (Acha) was significantly related to how well students involved in the class interactions (Ci),  $r = .56$ .

Relatively there are low correlations between the assessment task and the other sub-components ( $r = .20 - .30$ ), as well as, reading and writing and the other sub-components ( $r = .24 - .36$ ). In general, most of the scores of the correlations illustrated in Table 4 are between low to moderate values with fewer high correlations (Cohen, 1988). These correlation coefficients provide supporting evidence for the presence of relationship between the different engagement factors.

#### 5.4. Discussion

This study examined the convergent and discriminant validity of the student engagement construct using descriptive statistics, bivariate correlations, scale reliabilities (when applicable), and confirmatory factor analysis. The data were examined both at the item and scale levels. First this study assessed the data at the item level, to weeding out poor items, and examine whether the proposed factor structure held utilizing a minimal number of measures. Next the study examined the data at the scale level to validate the item-level results.

##### 5.4.1. The Nine Factor Structure of Student Engagement

**Integrative and collaborative learning.** This factor is a measure of the frequency with which students work independently or with peers to discuss concepts and ideas, and solve problems, inside and outside the classroom. It deals with the conditions of learning that essentially promote students to interact with peers and others about substantive academic matters, beyond the usual classroom instruction.

**Academic challenge in courses.** This component measures the amount and difficulty of the academic work required of students, and their perceptions of the degree to which coursework emphasizes higher-order thinking activities. The main purpose is to determine whether students find their academic work intellectually challenging since this is regarded as central to student learning and quality academic work.

**Student-teacher interaction.** This component reflects the frequency with which students interact with their teachers on academic matters in and out of class, and do research with them. It measures the extent with which students dealt with their teachers about course work and grades, and how promptly they have received assessment feedback from their teachers. Also, it measures whether students involve in research activities with academic staff members.

**Class interactions.** This component measures the level of active involvement of students in the instructional process. It is about students' exchanging of ideas and concepts and sharing experiences with other fellow students and their course teacher. These experiences create opportunities for students to get to know each other well and have shared their knowledge and learning experiences.

**Assessment tasks.** This factor is a measure of the amount of difficulty of the assessment tasks required of students, and their perceptions of the degree to which

assessment activities emphasize higher-ordered thinking. It is believed that assessment plays a central role in developing the curriculum and the teachers' pedagogic practice. Also, it contributes to the shaping of learners' motivation, their sense of priorities and their learning strategies.

**Supportive campus environment.** It is a measure of the degree to which students' perceive that their institution supports their academic and social needs. This can be possible by arranging in campus physical facilities to encourage students' informal interactions, such as setting chairs around areas where students usually meet or putting them in other places to permit students and teachers to continue conversations that they have started in class.

**Interpersonal relationships.** This refers to the quality of relations among peoples on campus, including students, academic members, and administrators. It is about human interaction within the college in matters related to academic and personal issues. By way of attending good interpersonal relationships, students built more psychological health through discussing ideas, sharing experiences, and revealing difficulties and concerns.

**Enriching the educational experience.** This component measures students' level of participation in activities that have educationally beneficial effects like information and communication technologies, and encourage them to connect their learning to real world problems. For example, practical, on-the-site, learning experiences provide opportunities for students to apply disciplinary knowledge with concrete realities in the everyday personal and professional life.

**Reading and writing.** This component measures the nature and extent of reading and writing activities students accomplished during their university years. This factor reflects the reading and writing experiences, as possible avenues for integrating and applying knowledge. It is believed that reading and writing are cross-cutting curricular issues that need to be well integrated into the undergraduate programs, thus their integration provides learning opportunities for the students to develop essential knowledge and skills.

This 9-factor structure is very similar to the factor structure suggested for a single institution study. For example, an 8-factor model fits better for a single institution data than a five factor model (LaNasa, et al., 2009). Also, a recent study reported a 6-factor revised model fitting so well for a single institution data, instead of the five factor model (Chosang, Steven, & Penny, 2013). Regardless of this, it has

been consistently confirmed that the instructional and academic interaction sub-components had relatively higher influence in representing the dimensions of student engagement scale (Krause & Coates, 2008; Kuh, et al., 2006; Pike, 2006). This was also true for a single institution studies as well (LaNasa, et al., 2009; Lutz & Culver, 2010).

#### **5.4.5. Convergent and Discriminant Validity and Reliability Issues**

The variance of a measurement variable can be divided into two component parts: (1) the communality: the variance accounted for by the measurement variable and shared with another variable; and (2) The uniqueness: the variance that is not accounted for by the measure variable in this way, the residual variance, which is not shared with other variables (Acock, 2010). A higher communality indicates a higher level of common variance between measurement variables and a lower level of uniqueness of each variable. Seen in this way, the variables used to measure each common factor, in the present study, have moderate to high levels of common variance. This common variance is one indication of the convergent validity of the variables used to measure. The other indication of convergent validity of the scale is the scale internal consistency analysis that shows an overall reliability of  $\alpha = .92$ .

The students' integrative and collaborative learning was found to be the most important factor influencing engagement compared with other factors. However, the variance explained by each factor is comparable to each other signifying the relative comparable weight of each factor contributions for the measured scale. In general, instructional and interactive factors compared to the support and relational factors explained relatively larger proportion of the variance explained, suggesting the relative higher worth of the former factors in determining student engagement in the Ethiopian higher education context. These factors were identified as the most salient factors affecting students learning (Krause & Coates, 2008). Research shows that improving interactions and a focus on academic challenge are of high importance to students learning and better academic achievement in university (Zapke, Leach, & Butler, 2009). This insight on the factor structures and their relative weight for a single institution study is an essential input for those who are charged with taking engagement survey results for translating them into a series of actions to improve the quality of the students' learning experience (Pike, 2006).

If treated as a scale, the reliability of each of the nine components of the scale would be above the recommended threshold, alpha ( $\alpha$ ) = .70 (Nunnally, 1978). As shown in Table 4, the reliability of four of the sub-components is ranging between alpha ( $\alpha$ ) .70 to .74, and similarly, the other four sub-components had relatively high reliability coefficients ranging between alpha ( $\alpha$ ) .77 to .81. If treated as a scale, only one factor had lower reliability coefficient ( $r = .63$ ), which indicates moderate measurement problems.

### 5.5. Conclusions and Implications

Based on the results of the present study, certain scales may prove more useful than others in future research endeavours. Among the student engagement measures, integrative and collaborative learning, student-teacher interaction, and academic challenge scales demonstrated relatively high scale variance and reliability. Similarly, the assessment task and supportive campus environment scales demonstrated relatively the strongest factor loadings at the item level. Although the reliability of the reading and writing scale was somewhat lower than the acceptable standard coefficient recommended in the social sciences research, it is important to note that the items used in the scale had relatively higher factor loadings (.62 - .83). In general, the nine factor of students' engagement scale that emerged from the confirmatory factor analysis displayed sound psychometric properties both at the item and scale levels. The results support that student engagement consists of nine interrelated yet distinct components.

These dimensions of student engagement, illustrated and discussed in the current study, best represent what matters most for the Ethiopian undergraduate students learning and should be well considered both in the formulation of policy as well as in practice. While it is difficult to suggest exactly what to do for better student engagement, the underlying factors provide the initial clue, at least where to start turning the lights on to promote quality teaching and learning in undergraduate education in Ethiopia. Internal consistency and inter-item correlation coefficients approximated those from prior studies and are considered to be adequate for sample-based research.

Furthermore, the most salient concepts explaining the student engagement, as per the PCF analysis findings of this study, were the integrative learning and out-of class collaborative experience, student teacher interaction, academic challenge,



and in-class active and collaborative learning. This highlights that is students' effort and teachers pedagogical practice seem to have relatively more influence than broader issues of interpersonal relations and support functions in the Ethiopian higher education context. This is consistent with other studies that demonstrated similar outcomes (Coates, 2006; Krause & Coates, 2008; Kuh, 2009; Kuh, et al., 2005). Thus their theoretical and empirical links with meaningful activity are therefore warranted not only in the Western countries where the student engagement survey is persistently utilized, but also in the other cultural context that adapted them with careful considerations of multidimensional validation and contextualization.

In tandem, this chapter shows that the notion of student engagement is not a single concept, but a catch-all concept describing tripartite perspectives of student learning experience: the student, teaching and institutional impact. This multidimensionality is corollary to the contemporary notion of student engagement. The nine dimensions of the student engagement scale presented in this study need to be further tested for their psychometric properties across different groups and calibrated for future use. The reading and writing items and their suitability within the prevailing academic culture need attention. Implications highlight the usefulness and practicability of the instrument and further suggest the role of contextualization and multifaceted validations in framing student engagement based on the Ethiopian undergraduate student's unique circumstances.

From the descriptive statistics, it became clear that the students' activity levels are not the same across the different dimensions of the student engagement scale, implying that some components such as: student teacher interaction, supportive campus environment, enriching educational experiences, and the classroom interactions relatively need much improvement than the other dimensions. Enriching the quality of these dimensions is crucial in future studies. The study calls for a more robust theorising of the student engagement concept in African perspective that encompasses both quantitative and qualitative measures, and multidimensional validation approaches.

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## Appendices

### Appendix A

#### Student Engagement Scale

4. In your experience at your college during the current academic year, about how frequently you have done each of the following?

Scale: 1: Never; 2: Sometimes; 3: Often; 4: Very often

<b>Active and Collaborative Learning</b>				
1) Asked questions in class	1	2	3	4
2) Contributed to class discussions	1	2	3	4
3) Made class presentations	1	2	3	4
4) Worked with other students on projects during class	1	2	3	4
5) Worked with classmates outside of class to prepare class assignments	1	2	3	4
7. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	1	2	3	4
<b>Integrative and reflective learning</b>				
1) Put together ideas or concepts from different courses when completing assignments or during class discussions	1	2	3	4
2) Worked on a paper or project that required integrating ideas or information from various sources	1	2	3	4
3) Examined the strengths and weaknesses of your own views on a topic or issue	1	2	3	4
4) Learned something from discussing questions that have no clear answers	1	2	3	4
5) Applied what you learned in a course to your personal life or work	1	2	3	4
6) Enjoyed completing a task that required a lot of thinking and mental effort	1	2	3	4
7) Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	1	2	3	4
<b>Student-teacher interaction</b>				
1) Discussed grades or assignments with a teacher	1	2	3	4
2) Discussed ideas from your readings or classes with teachers outside of class	1	2	3	4
3) Received prompt feedback from teachers on your academic performance (written or oral)	1	2	3	4
4) Worked with staff members on activities other than coursework (committees, orientation, student life activities, etc.)	1	2	3	4
<b>Enriching Educational Experiences</b>				
1) Used computer and information technology for learning related purposes	1	2	3	4
2) Used an electronic medium (Internet) to discuss or complete an assignment	1	2	3	4
3) Have done or plan to complete a practicum, internship, or field experience	1	2	3	4

5. During the current academic year, to what extent your coursework emphasized the following intellectual activities?

Scale: 1: Very little; 2: Some; 3: Quite a bit; 4: Very much

<b>Level of academic challenge</b>				
1) Understanding facts, ideas or methods from your subjects and readings	1	2	3	4
2) Analysing the basic elements of idea, experience, or theory	1	2	3	4
3) Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	1	2	3	4
4) Making judgments about the value of information, arguments, or methods	1	2	3	4
5) Applying theories or concepts to practical problems or in new situations	1	2	3	4

7. During the current academic year, about how much reading and writing have you done?

Scale: 1: None; 2: One to three; 3: Four to six; 4: More than six

<b>Reading and Writing</b>				
1. Number of readings on assigned text books or part of subject readings	1	2	3	4
2. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment	1	2	3	4
3. Number of written assignments below a page (fewer than 500 words)	1	2	3	4
4. Number of written assignments between 2-3 pages (500 to 1,000 words)	1	2	3	4
5. Number of written assignments more than 3 pages (more than 1,000 words)	1	2	3	4

8. To what extent does your college emphasize each of the following?

Scale: 1: Poor; 2: Fair; 3: Good; 4: Very Good

<b>Supportive Campus Environment</b>				
1. Providing the support you need to succeed academically	1	2	3	4
2. Helping you cope with non-academic responsibilities (work, family, etc.)	1	2	3	4
3. Providing the support you need to succeed socially	1	2	3	4

9. In your opinion, how do you rate the quality of your relationship with people?

Scale: 1: Poor; 2: Fair; 3: Good; 4: Very Good

<b>Interpersonal relations</b>				
1. Quality of relationships with other students at your college	1	2	3	4
2. Quality of relationships with academic staff members at your college	1	2	3	4
3. Quality of relationships with administrative staff at your college	1	2	3	4

10. Based on your experience in the current academic year, how do you rate the quality of your learning assessments?

Scale: 1: Very little; 2: Some; 3: Quite a bit; 4: Very much

<b>Assessment challenges</b>				
1. To what extent your quizzes and tests have challenged you to do your best work	1	2	3	4
2. To what extent your assignments have challenged you to do your best work	1	2	3	4
3. To what extent your mid-examinations have challenged you to do your best work.	1	2	3	4
4. To what extent your final examinations have challenged you to do your best work.	1	2	3	4

Table A1: Psychometric properties of the student engagement scale at the item level

Item	Obs	Mean	SD	Min	Max	Inter-item Corr.
ci1	536	2.48	0.9	1	4	0.22
ci2	536	2.9	0.77	1	4	0.22
ci3	536	2.76	0.88	1	4	0.22
ci4	536	2.94	0.89	1	4	0.22
icl1	534	3.15	0.79	1	4	0.22
icl2	536	2.85	0.84	1	4	0.22
icl3	536	2.82	0.76	1	4	0.22
icl4	536	2.81	0.8	1	4	0.22
icl5	534	2.88	0.79	1	4	0.22
icl6	535	2.85	0.87	1	4	0.22
icl7	533	3.01	0.79	1	4	0.22
icl8	534	2.91	0.8	1	4	0.22
icl9	536	2.96	0.77	1	4	0.22
sti1	536	2.59	0.97	1	4	0.22
sti2	536	2.29	0.94	1	4	0.22
sti3	536	2.47	0.98	1	4	0.22
sti4	536	2.04	0.98	1	4	0.22
eee1	536	2.51	0.97	1	4	0.22
eee2	534	2.77	0.95	1	4	0.22
eee3	536	2.6	0.91	1	4	0.22
acha1	536	3.07	0.74	1	4	0.22
acha2	536	3.08	0.73	1	4	0.22
acha3	536	2.82	0.79	1	4	0.22
acha4	535	2.83	0.78	1	4	0.22
acha5	536	2.8	0.91	1	4	0.22
rw3	534	2.55	0.98	1	4	0.22
rw4	534	2.81	0.94	1	4	0.22
rw5	534	3.07	0.93	1	4	0.22
sce1	533	2.61	0.94	1	4	0.22
sce2	536	2.3	1.04	1	4	0.22
sce3	536	2.58	1.01	1	4	0.22
ipr1	536	3.13	0.87	1	4	0.22
ipr2	536	2.71	0.92	1	4	0.22
ipr3	536	2.56	1.04	1	4	0.22
at1	536	2.79	0.91	1	4	0.22
at2	536	2.95	0.87	1	4	0.22
at3	536	2.78	0.96	1	4	0.22
at4	536	2.91	0.95	1	4	0.22

## **Chapter Six: Nurturing Cooperative Learning Pedagogies in Higher Education Classrooms: Evidence of Instructional Reform and Potential Challenges**

### **Abstract**

This article presents a pilot study that examined instructional practices and student outcomes of two courses designed using cooperative learning (CL) pedagogies in Ethiopian university context. The participants included 58 undergraduates and two teachers. The quantitative results showed that four inter-correlated pedagogical factors: Cooperative interaction, task orientation, academic challenge, and teaching effectiveness, together accounted for 69% and 52% of the variance in students' satisfaction and gains scores, respectively. Each factor significantly predicted students' satisfaction and gains,  $\beta \geq .27$ . Also, the qualitative results demonstrated that the teachers were able to incorporate CL pedagogies to existing instructional practices. Correspondingly, students found that they were more focused on their learning, experienced more interaction and enjoyment, and gained more academically than they had achieved before being involved in this initiative. However, the academic culture and local constraints put negative influence on implementation; findings illustrate how shifting the focus of instruction from a content-centered form to a learning-centered form greatly impacts not only the learning in class but also other important indicators of students' success. Studies of the first author are underway comparing; instructional practices and student outcomes of courses delivered via traditional lecture versus courses delivered using CL.

*Keywords:* cooperative learning, Ethiopia, higher education, pedagogical Factor, student outcome



## 6.1. Introduction

Quality teaching and learning have taken centre stage in on-going educational reforms in higher education, internationally, as facilitating effective learning has become a major issue of concern to the 21<sup>st</sup> century university (Schleicher, 2011). Creating instructional conditions that promote student engagement and learning are challenging for many higher education teachers (Haggis, 2006) since they commonly relied on lecture as their main form of teaching (Fink, 2013). The situation is compounded in the developing countries, particularly Africa because of rapid expansion, difficulties with access to resources, and the constraints associated with internal capabilities (Schweisfurth, 2011; Teferra & Altbach, 2003).

If teachers are not supported to change their instructional practices, it is more likely that many of the challenges they face will remain too great to overcome (Ramsden, 2003). To cope with these constraints and improve the quality, the primary focus needs to be on understanding the complexity of teaching and learning (Loughran, 2013), and transforming teachers attitudes and beliefs that change habits of work (Merrilyn Goos, Shelley Dole, & Katie Makar, 2007). A more realistic strategy is to improve the quality by establishing new pedagogies that are adaptive to local needs and constraints, at the same time providing the necessary support for teachers during implementation (Penuel, Fishman, Yamaguchi, & Gallagher, 2007).

Various pedagogic approaches exist to help teachers transform classrooms into more engaging and more supportive learning environments, and one such approach is the structured small-group learning. Structured small-group instruction, here referred to as *cooperative learning (CL) pedagogy*, provides teachers with an alternative toolkit, to help them effect such changes (Smith, 2006; Yamarik, 2007). Research at the undergraduate level indicates that CL is more effective than traditional form of teaching in terms of promoting greater academic achievement, more positive attitude towards learning, and increased social outcomes (Johnson & Johnson, 2002a; Johnson, et al., 1998, 2007).

### 6.1.1. Rationale

Attempts to improve quality teaching practices by imposing expectations on academics are likely to result in a compliance culture (Au, 2011). This, in turn, could impact negatively on them resulting in losing ownership and control and compounding their negative feelings about academic work (Shulman & Shulman,

2004). Part of the argument is that, improving quality teaching represents human behavior and can only be changed at an individual level (Biggs, 2012). Seen from a developmental perspective, a focus on quality improvement and establishing a conducive and supportive culture is evolutionary (Squire, et al., 2003) and cannot be dictated from above (Ramsden, 2003), but rather it needs to evolve from within the institution (Gosling, 2006).

Even if most institutions of higher learning and quality assurance agencies have not ignored the quality of teaching and learning occurring in classrooms, the concern remains that they have not seen it as crucial in their efforts to promote quality learning (Trowler, et al., 2005). This, in part, may be because the students' learning experience and classroom culture are not considered critical for quality improvement. Studies have shown that the lecture is still the dominant pedagogy in the higher education classrooms (Chisholm & Leyendecker, 2008; Kezar & Kinzie, 2006), however, "the lecture rarely, if ever, supports learner engagement in inquiry, discussion, and/or expository learning" (Hennessy & Evans, 2006, p. 99). Even good lecturing was found inadequate to develop students ability to apply learned materials in new situations and promote higher-order cognitive skills among the students (Fink, 2013). These and other studies results suggest that lecturing alone is not working very well.

Most of the time, efforts to improve teachers' pedagogical practices result in the adoption of instructional techniques without full understanding of the prevailing conditions and the pedagogical reasons for the use of such techniques (Tabulawa, 2003). However, this stance appears misguided in the light of accumulated evidence over the years that reflect teachers' professional learning as a complex process rather than a linear one (Gravani, 2007; Webster-Wright, 2009).

In Ethiopian higher education, most teaching is characterized by a high degree of teacher control, student passivity and powerlessness (Desta, 2004; Fisher & Swindells, 1998; Tadesse, Manathunga, et al., 2012; Zerihun, et al., 2012). The other issue is that, teachers continue to use teaching practices that are not effective at promoting higher-order thinking outcomes. The cause for these shortcomings appears to be with the policy as it sets unrealistic expectation to promote the learner-centered approach in the system, without a corresponding focus to cope with the challenges of widespread implementation (Assefa, 2008), and without transforming the academic culture. However, there are top-down initiatives these alone were often

found insufficient to achieve deep and lasting quality improvements in university teaching and learning (Areaya, 2010). Also, research shows that the in-service teacher professional development program did not bring the anticipated changes in pedagogical approaches in ways assumed by the program planners (Moges, 2010; Piper, 2009). Compounded by these and other problems, the quality of higher education in Ethiopia is continually deteriorating.

In response to the status quo in Ethiopia, a preliminary investigation, focusing on improving the quality of teaching and learning, was conducted to examine whether CL pedagogies contribute to enhance the quality of the instructional environment and the learning experience of the students. The purpose of the current study was to investigate the pedagogical factors that facilitated students' learning, and explore their relations with the students' satisfaction and gains, and further assess the local constraints that surrounded the implementation process.

### **6.1.2. Cooperative Learning as a Pedagogy of Student Engagement**

Two critical features, are often cited in the literature, to distinguish CL from other forms of *small* group instruction: positive interdependence and individual accountability (Johnson & Johnson, 2009). A sense of individual accountability forms the base for a significant interaction among the students. The notion of interdependence is established through structuring learning environment for all members of a CL team. This helps for the group members to share mutual responsibilities for learning and develop more positive relationships (Johnson, et al., 2007). One strategy to effect this sense of mutual responsibility is through providing learning materials that must be shared among group members. A second way is assigning different materials to each expert team to master as in the Jigsaw strategy (Aronson, et al., 1978). Once the materials have been studied by each expert team, the members return to their original (home) groups to share learning with their teammates. Finally, group cohesion can be promoted through assigning a team, a joint goal with the group being collectively rewarded for their team performances. For this, group investigation has been most widely used across many higher education institutions.

Cooperative learning has been shown as effective in improving the learning and other student outcomes (Sharan, 2010a). While less able students appear to benefit significantly from their engagement in cooperative groups (Wilkinson & Fung,

2002), high achievers do not appear to be disadvantaged and actually benefit from the opportunity of teaching peers (Webb, 2008). Benefits can, under certain conditions, accrue to both those giving and receiving help (Gillies, 2003). In heterogeneous peer-led groups, students of lower and higher ability can benefit mainly due to an informal teacher–learner relationship formed between the group members (Cohen, et al., 1999). In addition, a multiplicity of other benefits including promoting friendships amongst students, improving self-esteem, and so forth have been highlighted (Cohen, 1994).

The contribution of CL is not only for the learning of the students, but also, for the teachers to improve teaching, as well. As a tool to help transform teaching, CL is most attractive, as it has a firm research base; while on the other hand, it does not require expensive curricular resources (Johnson & Johnson, 2009; Sharan, 2010a). However, achieving positive result depends on contextualization, providing staff development for the teachers involved (Ferguson-Patrick, 2011), explicitly describing the roles of the teacher, carefully designing the learning tasks, and students' learning appropriate social skills (Gillies, 2004). Above all, it depends on understanding, commitment, and continual practice (Smith, 2000).

### **6.1.3. Conceptual Framework**

This study conceptualizes CL pedagogy, in a very general sense, referring to the design and implementation of courses and instructional approaches according to a CL approach (Gillies, 2003; Smith, 2006; Smith, et al., 2005). Guided by this, the study applied curriculum-based innovative course design, and adapted implementation using a process as a way to structure learning (Hunter & Scheirer, 1988). Under these influences, the notion of experience being central in learning is emphasized, and the role of the process as a way to integrate curricular components is clearly demonstrated (Cornbleth, 1988). This study was guided by the epistemological and pedagogical stances as described in the works of scholars, particularly learning as doing (Dewey, 1963), learning as social participation (Lave & Wenger, 1991), learning as environmentally and culturally situated activity (Vygotsky, 1978), and learning as participation with other learners (Barbara Rogoff, Turkianis, & Bartlett, 2001).

## 6.2. Method

### 6.2.2. Research Design

This study used a case study method (Stake, 1983) emphasizing directly to the design and implementation of CL pedagogies. Both quantitative and qualitative data (Guba & Lincoln, 1983; Scriven, 1983) were used to gain a holistic picture of the implementation process and the resulted outcomes. A quantitative study model and a qualitative analysis framework were developed to guide analyses in subsequent sections. Prior to the start of the intervention, the two instructors and their students were informed about the purpose of the study. The necessary data was collected after obtaining informed consent from each participant.

### 6.2.2. Participants

Instructors for two undergraduate courses in two different disciplines participated in this pilot study. The courses included: 1) psychology: Psychological Testing and 2) sport sciences: Measurement and Evaluation in Human Performance. In these two courses, a total of 65 students (30 students of 2<sup>nd</sup> year, sport sciences major and 35 students of 3<sup>rd</sup> year, psychology major) participated; however, seven students excluded from the analyses due to excessive loss of the required data. Thus, the student sample included 58 students (26 Sport Science major and 32 Psychology major). The student sample was young ( $M = 21.26$ ,  $SD = 1.72$ ), and 83% male. The two instructors and eight selected students participated in the interview. The student interviewees included four students from each discipline with a proportional representation of students by gender and academic achievement.

### 6.2.3. The Nature of the Intervention

The main focus of this intervention is the incorporation of CL pedagogies into to existing instructional practices of two major courses in the department of psychology and the department of sport sciences. In these two courses, informal CL methods such as “think-pair-share” and “formulate-share-listen-create” were implemented, and the formal CL, the Jigsaw strategy (Aronson, et al., 1978) and group investigation (Cohen, 1994) were employed. The students participated in the CL activities each week for four weeks during the first semester of 2011/12 academic year.

The informal CL activities were designed to stimulate interest at the beginning of a lesson, and in a culminating activity to enable them to discuss the materials learned and thus acquire deeper understandings of it. These activities follow a three stage procedure, beginning with an individual thinking activity, then pair work, and finally teacher-led whole class discussion. With the individual work, every student takes responsibility to do the assigned learning task and write down something possible in preparation for the pair-work. With the pair-work, students share understandings and co-construct knowledge to arrive at a mutually shared learning product. While the individual work promotes personal accountability for learning, the pair-work promotes mutual interdependence through a commonly shared action of pair members. Finally, the whole class discussion used for the sharing of group understandings more widely and this promotes social interdependence through the participation of students in the instruction.

The jigsaw lesson was designed and implemented for a double period as the activities needed more time to complete. For this, a single chapter of each course was considered, in Psychology major, the chapter “Reliability Estimation” and in Sports Sciences major, the chapter “Skill-Related Physical Fitness.” For these chapters, students received hand-outs before a week so that every student had the opportunity to read the material in advance. This task helped students to exercise mutual autonomy, creativity, and collective decision making. Subsequently, in each jigsaw, member groups had their sharing of the synthesized material from each expert short presentation, asked questions and clarifications, and identified areas of difficulties for further discussion with the teacher. This allowed jigsaw members to draw connections across the different topics of the chosen chapters, at the same time, exercising individual accountability and social interdependence within the jigsaw group. In this lesson, students’ were randomly assigned to the different jigsaw groups and to the topics of expert groups. Also, heterogeneous membership was maintained based on gender and previous academic achievement the level best. The main focus here is to promote fairness and equity through establishing randomized heterogeneous grouping.

To achieve the practical application of the concepts covered in the jigsaw lessons, the last CL lesson was designed for students’ participation in a group investigation and group marking using scoring rubrics. Thus, allowing students to experience the full implications of positive interdependence within CL, at the same

time, providing them the opportunity to practice “assessment for learning”. For this final lesson, the jigsaw group structure was maintained. Each jigsaw group worked on two-clustered assignment questions out of the possible seven-to-eight questions, and these assignments were randomly allocated to the different jigsaw groups. Through random assignment of questions and including heterogeneous group members in each jigsaw by gender and their previous academic achievement, fairness and equity issues were addressed. The students did the group investigation assignment out-of-class.

At the start of the last CL lesson, the teacher distributed a scoring rubric to the different jigsaws to refine their assignment work and get prepared for intergroup peer assessment and marking. The main task of intergroup peer assessment was to assess the work of the other jigsaw members based on a scoring rubric, and prepare some written feedback for them. For this, the teacher assisted in the different jigsaw groups by clarifying contents of the scoring rubric and what they are supposed to do with it. Following students’ experience of finalizing the assignments and scoring in *small* groups under the close supervision of the teacher and the first author, they received their group marks; the lessons were then reviewed to gain understandings of their impressions of their experiences of the group assignment and marking.

#### **6.2.4. Structuring and Organizing Groups**

The group structure is the building block of a CL pedagogy that determines the classroom norms (Gillies, 2003). In this study, group structure was formed using standard small group norms, for example, group size between two to four members and heterogeneity of members in each group (Cohen, et al., 1999; Gillies, 2004). Also, this study used context specific criteria for selecting group members (Sharan, 2010b), for example, gender, cumulative grade point average (CGPA), and teachers’ professional judgment. After forming the group structure, different small group tasks were organized. Group organization focuses on specifying small group learning tasks, assigning responsibilities, and managing students small group work (Cohen, et al., 1999; Sharan, 2010a).

#### **6.2.5. Data Collection**

**Questionnaire.** Student participants of this study completed a survey questionnaire largely modified from the Australasian Survey of Student Engagement

(Coates, 2010) and earlier built local teaching effectiveness instrument (Tadesse, 2006). Through the different items, participants were asked to think about their experiences in the CL activities, and perceptions regarding learning satisfaction and educational gains. While reading statements, participants indicated how true the statements were for them. Teaching effectiveness items began with, 'Based on your experience in the cooperative learning activities of this course, please rate the quality of teaching on the following points?' and were scaled 1 (*poor*) to 4 (*very good*). Levels of academic challenge items began with, 'During the cooperative learning lesson to what extent your coursework emphasized the following intellectual activities?' and were scaled 1 (*very little*) to 4 (*very much*). Cooperative interaction and task orientation items began with, 'During the cooperative learning lesson, about how often have you done each of the following?' and were scaled 1 (*never*) to 4 (*very often*). Satisfaction items began with, 'How would you evaluate the level of satisfaction you and your class students benefited from the learning experience of this course?' and was scaled 1 (*very little*) to 4 (*very much*). The remaining educational gain items began with 'To what extent has the learning experience in the cooperative learning lesson contributed to your learning and development in the following ways?' and were scaled 1 (*very little*) to 4 (*very much*).

**Semi-structured interview.** The teacher and student participants were interviewed separately using the first author's semi-structured interview protocol. We conducted one-on-one interviews with teachers and students as one source of data collection. Interviews ranged between 20 to 30 minutes and focused on a series of questions that asks the participants for their views on the following themes: (1) general perception about their experience in the CL lessons; (2) aspects of CL they have seen as strength; (3) examples that reflect this strength; (4) the teacher's roles and the students' responses in the CL lessons; (5) some of the challenges they have faced; and (6) their general comments about the CL lessons in general.

#### **6.2.6. Specifications of the Quantitative Study Model**

In the realm of evaluation of instruction, the probable nature of the relationships among instructional conditions ascribed to facilitate students learning and development can best be determined by taking a core set of variables based on insights gained from the literature and empirical evidence (Cronbach, 1983). The most salient features of this relationship can be defined through pathways among the



variables to indicate which predictor variables influence the outcomes (Bollen, 2002). Adding other variables to the model tests the stability of the model (Ahlfeldt, Mehta, & Sellnow, 2005) and expands its dynamic responses and counterfactual effects (Bentler, 2007). The theoretical underpinnings of these interactions, particularly embedded in the higher education research literature provide a rather simple framework for testing the predictive relationships of the pedagogical factors with the student outcomes (Carini, Klein, & Kuh, 2006; Steele & Fullagar, 2009).

Seen from a CL perspective, researchers such as Gillies (2007), Johnson, Johnson, and Smith (2007), and Sharan (2010a) intended a causal link when they made a distinction between CL condition and academic and social outcome. In this scenario, the condition indicates the pedagogic tools and instructional practices as facilitators (Smith, et al., 2005; Webb, 2008) while the outcome represents students' personal reactions as a result of exposure to the proposed instructional condition (Sharan, 2010a). This implies the separation of the instructional process and outcome (Yamarik, 2007). This made it quite clear that students deal with CL condition in some way before any positive response to occur in terms of outcomes (Steven, 2007). There is empirical evidence about the practical benefits of a CL model for the university classroom instructions (Johnson & Johnson, 2002a; Johnson, et al., 2007; Pham Thi Hong, Gillies, & Renshaw, 2011; Smith, et al., 2005; Yi & LuXi, 2012). Therefore, this study quantitative model draws from the broader literature on student engagement theory related to the learning experience of undergraduate students (Coates, 2006; Kuh, 2009) and the cooperative learning theory related to pedagogical practices in the undergraduate students' classrooms (Johnson & Johnson, 2002b, 2009; Smith, et al., 2005). The literature suggests multifaceted pedagogical frameworks and the importance of the classroom culture for influencing how classroom practices could be shaped and adopted in the context.

Building on these, the current study, attempted to map out a quantitative model by drawing direct path connections from the pedagogical variables to the student outcomes, with an expectation that these constructs may relate positively. The model has six sub-components: Cooperative interaction (Copi), task orientation (Tori), academic challenge (Acha), teaching effectiveness (Teff), Satisfaction and Gains (Figure 3).

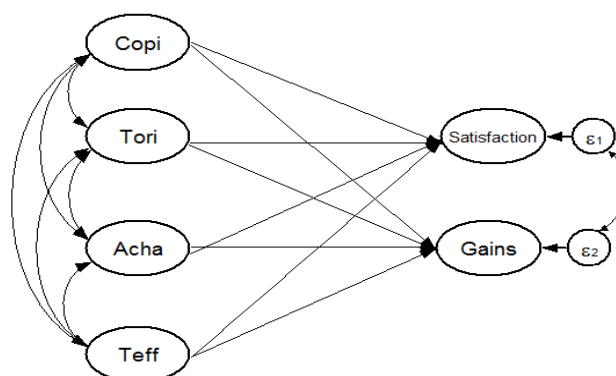


Figure 3. The quantitative study conceptual model with 4-pedagogical variables and 2-criterion outcomes.

Ovals represent latent variables.  $\varepsilon_1$  and  $\varepsilon_2$  denote residual terms representing unmeasured influences on endogenous latent variables (Satisfaction and Gains).

The pedagogical components: Copi, Tori, Acha, and Teff are “predictor” variables and were measured by 4 composite factor scores. The cooperative interaction subscale consisted of 5 items ( $\alpha = .86$ ), the task orientation subscale consisted of 5 items ( $\alpha = .82$ ), the academic challenge subscale consisted of 3 items ( $\alpha = .75$ ), and the teaching effectiveness subscale consisted of 3 items ( $\alpha = .80$ ). Similarly, the two “outcome” variables: satisfaction and gains were measured by two composite factor scores, and Cronbach's alpha for the 5 satisfaction and 6 gains items were .88 and .81, respectively. Overall, these reliabilities are well above the minimum coefficient alpha ( $\alpha = .70$ ) that is recommended for social sciences research (Nunally & Bernstein, 1994).

### 6.2.7. Confirmatory Factor Analysis and Correlation Analysis

The quantitative model has been employed, primarily to provide explanations about why students participate in the CL activities and to suggest strategies for better results of such participations. This study obtained multiple measures for variables said to constitute the pedagogical components of participation in the CL activities. Because the pedagogical variables in this quantitative model are explanatory, their construct validity must be supported before we can have confidence that explanations based on this quantitative model reflect reality. For this, we used confirmatory factor analysis (CFA) and correlation analysis.

We used a principal component analysis (PCA) with varimax rotation, to assess the factor structure and identify the pedagogical components of the 24 scale variables. The Kaiser-Meyer-Olkin measure for this group of measured variables has

shown the sampling adequacy for the analysis ( $KMO = .73$ ) (Kaiser, 1974). Also, Bartlett's test of sphericity,  $\chi^2 (276) = 837.68, p < .001$ , indicated that correlations between the items were sufficiently large for PCA. Items in each scale were retained in the model if they had a loading of at least .40 on one factor and if at least three items measured it, regardless of its eigenvalue. An initial analysis was run on the 24 items to obtain eigenvalues for each factor in the data; four factors comprising 16 items had an eigenvalue over Kaiser's criterion of 1 and had items 3 and above, and explained 69.23% of the variance. Based on Kaiser's criteria components and the scree plot inflexions that justify retaining 4 factors, the final analysis retained the following four factors: cooperative interaction, task orientation, academic challenge, and teaching effectiveness. Table 5 shows the number of items that make each subscale, and the associated variance.

Table 5. *Factor Loadings (Pattern Matrix) and Unique Variances for the Pedagogical Indicator Items (N=54)*

Scale	Copi <sup>1</sup>	Tori <sup>2</sup>	Acha <sup>3</sup>	Teff <sup>4</sup>	<sup>5</sup> Uniqueness
copi1	<b>.80</b>	.18	.22	.13	.26
copi2	<b>.68</b>	.35	.02	.14	.40
copi3	<b>.84</b>	-.07	-.03	.28	.20
copi4	<b>.71</b>	.14	.08	.29	.38
copi7	<b>.78</b>	.27	.15	.00	.29
tori1	.21	<b>.74</b>	.33	.16	.28
tori2	.30	<b>.47</b>	.36	-.22	.51
tori3	.16	<b>.83</b>	-.03	.24	.23
tori4	.31	<b>.69</b>	.11	.33	.31
tori5	-.04	<b>.74</b>	.31	-.09	.35
acha3	.19	.11	<b>.78</b>	.06	.34
acha4	-.09	.26	<b>.83</b>	.07	.23
acha5	.21	.02	<b>.78</b>	-.01	.35
teff1	.35	.34	-.04	<b>.72</b>	.24
teff4	.06	.00	.13	<b>.84</b>	.27
teff5	.27	.20	-.01	<b>.78</b>	.29
Percent of Variance	21.67	18.51	14.69	14.36	
Eigen Value	3.47	2.96	2.35	2.28	

*Note.* Factor loadings > .40 are in boldface. <sup>1</sup>Copi = Cooperative interaction; <sup>2</sup>Tori = Task orientation; <sup>3</sup>Acha = Academic challenge; and <sup>4</sup>Teff = Teaching effectiveness. <sup>5</sup>Uniqueness refers to the variance that is 'unique' to the variable and not shared with other variables in the model.

As shown by the standardized score loadings of the set variables in Table 5, all items loaded on the four pedagogical factors well above the recommended level. For example, item 1 (copi1) loaded at .80 on the factor, Cooperative interaction, and item 5 (copi5) loaded at .78 on the factor, Teaching effectiveness. Thus, all item loadings exceeded .70, except few. Moreover, the uniqueness of each variable, representing the variance not shared with other variables in the factor model ranges from .20 to .51. These low levels of uniqueness, together with, the high factor loadings for most of the items used in the scales confirmed that each of the four pedagogical components was well defined by its set of items. The correlations among the pedagogical factors ranged from .15 to .59 (Figure 4).

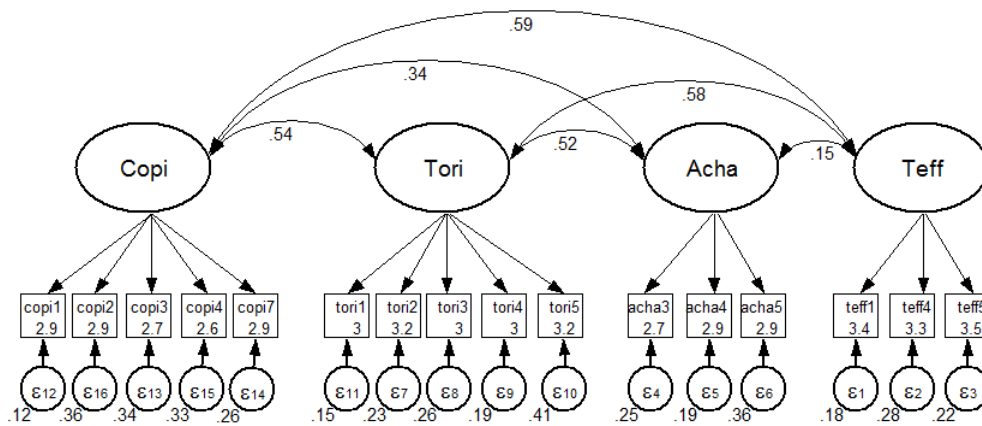


Figure 4. The correlations among the latent variables in the four-factor model.

Ovals represent latent variables. Square represents observed variable. ε1, ε2, ε3, and so forth denote residual terms representing unmeasured influences on observed variables. Double head arrow represents correlations between latent variables. All correlations are significant at .001.

As shown in Figure 4, there is high positive correlation between teaching effectiveness and cooperative interaction ( $r = .59, p < .001$ ), confirmed that the more teachers’ demonstrate effective teaching roles, the better their students interact cooperatively in classroom learning. However, the presence of weak correlation between teaching effectiveness and academic challenge ( $r = .15, p < .001$ ) indicated that, the teachers’ effective teaching roles has minimal or weak relation to the emphasis placed on academic challenge. In contrast, the presence of high correlation between academic challenge and task orientation ( $r = .52, p < .001$ ) indicated that, the higher the emphasis teachers placed on academic challenge, the more task oriented the students become.

### 6.2.8. Data analyses

This study compared the scores for the six areas and examined the correlations of the pedagogical factors with the students' outcomes. It also performed two separate multiple regression analyses for the two outcomes to determine, if the pedagogical components were effective overall, and to assess the relative strength of each pedagogical factor in predicting the outcome.

### 6.3. Results

#### 6.3.1. Quantitative Results

The descriptive statistics showed that the two courses achieved higher scores in all the 6 components: cooperative interaction, task orientation, academic challenge, teaching effectiveness, satisfaction, and gains (Table 5). Although we emphasized all these six areas equally well, the descriptive results showed differential outcomes with the highest mean score being the teaching effectiveness scale ( $M = 3.38$ ,  $SD 0.66$ ). Descriptive statistics and correlation analyses for the six areas are shown in Table 6.

Table 6. Means, Standard Deviation, Partial and Semipartial Correlations for Scores on Pedagogical Variables as a Function of Satisfaction and Gains ( $N = 54$ )

Pedagogical predictor	Satisfaction		Gains		<i>M</i>	<i>SD</i>
	Partial corr. <sup>1</sup>	Semipartial corr. <sup>2</sup>	Partial corr.	Semipartial corr.		
Cooperative interaction	0.68	.52***	0.61	.52***	2.82	.81
Task orientation	0.62	.44***	0.52	.41***	3.07	.73
Academic challenge	0.02	.01	0.32	.23*	2.87	.74
Teaching effectiveness	0.64	.47***	0.34	.24*	3.38	.66
<i>M</i>	2.97		3.07			
<i>SD</i>	.75		.71			

Note. <sup>1</sup>Correlation between each predictor and an outcome measure controlling for all other predictors; <sup>2</sup>Correlation between each predictor and an outcome measure controlling the effects of all other predictors from the specific predictor, but not from the outcome measure.

Means and standard deviations for the instructional variables are presented in the vertical columns, and means and standard deviations for satisfaction and gains are presented in the horizontal rows.

Significance levels. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Also, the partial correlation between each pedagogical variable and the student outcome was positive. Moreover, the semi-partial correlations between three of the four factors with satisfaction were statistically significant ( $p < .001$ ) and ranged from .44 to .52. This indicated that, approximately 19% to 27% of the variance in satisfaction, in the sample, can be accounted for by any of the three pedagogical factors. Similarly, the semi-partial correlation of each pedagogical factor with learning

gain was statistically significant and ranged from  $r = .23$ ,  $p = 0.021$  to  $r = .52$ ,  $p < 0.001$ . This indicated that, approximately 5% to 27% of the variance in learning gain in the sample can be accounted for by the four pedagogical factors.

Two separate multiple regression analyses were conducted, simultaneously to test, if the pedagogical factors significantly predicted participants' ratings of satisfaction and gains over and above students' major field, age, and gender. Guided by the quantitative study model (Figure 3), our interest with these analyses was in identifying those pedagogical factors that may relate with the student outcomes. Specifically, we tested the following hypotheses:

Hypothesis 1: Sense of satisfaction attributed to students' participation in the CL condition are positively associated with a combined effect of four pedagogic measures, over and above the students major field, age and gender.

Hypothesis 2: Perceived gains in learning and personal development attributed to students' participation in the CL condition is positively associated with a combined effect of four pedagogic measures, over and above the students' major field, age and gender.

Predictor variable: Cooperative interaction, task orientation, academic challenge, teaching effectiveness, major field, age, and gender.

In order to include major field and gender in the regression models, one dummy variable was constructed for each. The base category for the gender dummy was male while that of major field was Sport Science. Dummy variables for gender were (0 = male, and 1 = female) and major field (0 = sport science, and 1 = psychology). The summary of regression results are shown in Table 7.

Table 7. *Multiple Regression Analysis for Variables Predicting Student Satisfaction and Gains (N = 54)*

Predictor	Model 1 (Satisfaction)				Model 2 (Gains)			
	B	SE <sup>3</sup>	$\beta$	t	B	SE	$\beta$	t
Major field <sup>1</sup>	0.09	0.19	.04	0.45	0.34	0.24	.17	1.41
Age	-0.05	0.05	-.08	-0.92	-0.02	0.06	-.04	-0.36
Gender <sup>2</sup>	0.44	0.22	.17*	2.03	0.16	0.27	.06	0.58
Cooperative interaction	0.60	0.09	.59***	6.72	0.62	0.11	.61***	5.55
Task orientation	0.49	0.08	.48***	6.09	0.44	0.10	.43***	4.35
Academic challenge	0.00	0.09	.00	-0.04	0.28	0.11	.27*	2.5
Teaching effectiveness	0.50	0.08	.49***	5.92	0.30	0.11	.29**	2.84
R <sup>2</sup>	.73				.58			
Adjusted R <sup>2</sup>	.69				.52			
F change	17.58***				9.04***			

Note. <sup>1</sup>Sport Science is reference group; <sup>2</sup>Male is reference group. <sup>3</sup>Standard Error.

Significance levels. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The first regression model revealed that the four pedagogic variables, together accounted for a significant proportion of the satisfaction variance,  $R^2 = .73$ , adjusted  $R^2 = .69$ ,  $F(7, 46) = 17.58$ ,  $p < .001$ . Similarly, the second regression model revealed that the same pedagogic variables, together accounted for a significant amount of the gains variance,  $R^2 = .58$ , adjusted  $R^2 = .52$ ,  $F(7, 46) = 9.04$ ,  $p < .001$ .

Each measured pedagogical variable appeared to be a significant positive predictor of the students' gains scores ( $\beta = .27$ ,  $p = .016$ ), as did teaching effectiveness ( $\beta = .29$ ,  $p = .007$ ), task orientation ( $\beta = .43$ ,  $p < .001$ ), and cooperative interaction ( $\beta = .61$ ,  $p < .001$ ). Similarly, cooperative interaction significantly positively predicted the students' satisfaction scores ( $\beta = .59$ ,  $p < .001$ ), as did task orientation ( $\beta = .48$ ,  $p < .001$ ), and teaching effectiveness ( $\beta = .49$ ,  $p < .001$ ). The variable cooperative interaction made the highest predictions of satisfaction and gains ( $.59 \leq \beta \leq .61$ ,  $p < .001$ ). However, it seems that emphasis on academic challenge did not significantly relate to student satisfaction. Of the three controlling variables, only gender contributed for the predictions of satisfaction ( $\beta = .17$ ,  $p = .048$ ) such that male students reported greater satisfaction than female students. Regardless of this significant contribution, the other controlling variables did not contribute for the predictions.



### 6.3.2. Results of Qualitative Interview

**Conceptual framework for qualitative analysis.** This study used an interactive process that provides priority to the qualitative data and a facilitation of understanding by previous research about the phenomenon under investigation. As a result, the students' and teachers' interview transcripts were organized into three major themes: 1) general perceived values and attitudes on CL pedagogies (Gillies, 2006; Sharan, 2010a), 2) participants' lived transformative experiences as a result of participation in the CL classroom practices (Gillies, 2004; Johnson & Johnson, 1999); and 3) difficulties faced during implementation and ways to alleviate them (Gillies & Boyle, 2010; Johnson & Johnson, 2004; Sharan, 2010b). These conceptualizations provide theoretical outlines of the qualitative data and guide analyses in subsequent sections. In this analysis, the interview participants have been divided into two groups: 1) The teacher group (T) represents teachers' participants in the pilot intervention; and 2) Student group (S) represents the students who participated in the interviews.

**6.3.2.1. Participants perceived values and attitudes.** In the views of the interviewed teachers, the CL pedagogy created a positive learning environment for students to interact with, and encouraged cooperation in small groups. For example, one of the teachers (T2) said that the learning activity made students more comfortable since it gave them the opportunity to sharpen ideas before the sharing with the whole class. The other teacher (T1) supported that the CL approach created a relatively easier learning atmosphere for the very shy and uncertain students to feel more confident and better prepared for the whole class discussion.

All the interviewed students saw their experiences with CL activities positively. They described that the CL activities were more enjoyable, more interesting, and more important. The participant students described different aspects of the CL experiences as being important. Of the stated items, the most prominent ones include sharing, positive relationships, increased interactions, active engagement, teacher support, and student-centeredness.

**6.3.2.2. Participants' lived transformative experiences.** The interviewed teachers acknowledged that the CL pedagogies were student-centered and provided opportunities for students to engage in different learning experiences. They also highlighted some teaching advantages, as well. As one of the interviewed teachers (T2) commented, the CL pedagogies offered support for teaching effectiveness by

creating possibilities for coverage of wider contents, the sharing of teaching responsibilities with the students, and maintaining vertical integration that could help students to see the logical relationship between related ideas and concepts. In support of the latter issue, the other teacher (T1) added that the Jigsaw structure enabled the flow of content to be unimpeded. However, the teacher interviewees' noted differences in the level of participation amongst the students; in such a way that some students participated more actively than others. Regardless of this notable difference, their students reacted to the CL pedagogies quite positively. For example, they showed a willingness to work with other classmate, sometimes providing support in arranging the classroom, and they were interested in learning.

Students' interview accounts verified that their participation in this initiative was their first exposure to CL. One male student (S4) described that engaging in the CL activities gave them the chance to get involved in one of the pedagogical approaches that are used to promote student-centered learning. Another female student (S1) clearly highlighted the desired changes when she says:

Changing from the previous (traditional) approach of teaching where we were expecting everything from the teacher, to an approach where we tried to work with our own. It was very interesting to sit and work together with other students instead of always sitting in front of the teacher and having contact only with the teacher.

Also, a female student (S5) described: "Normally the teacher used to lecture, so we expect everything, from the teacher but in the small group learning we were encouraged to express ourselves rather than expecting from the teacher." In support of this and revealing engagement in challenging learning experiences, a female student (S2) explains:

In the small group learning, sharing what you know whereas other students may not know was very interesting. For example, the concept 'internal consistency' started with a discussion among the group members in the class and further discussion in dormitory around the assignment given. Such type of experience was an opportunity for us to learn new ways of approaching teaching and learning.

The interviewed students commented that there was increased student-student interaction in the CL activities. For example, a student (S6) describes:

In the Jigsaw lessons - I explained about cardiovascular tests while other members of my Jigsaw shared about other aspects of skill-related physical fitness such as strength, flexibility

and speed. In those small groups learning, we were given the chance to express ourselves, and that may be considered beneficial for the improvement of communication skills.

As one of the interviewed female students (S8) commented, through the CL activities, it was appealing and useful to see the active participation of those students who were low achievers, shy or silent listeners. On top of this, the teacher encouraged them to accomplish the given learning tasks, and supervised their work and sometimes provided hints and additional information when needed. Another female student (S2) particularly stressed the importance of designed lessons in that way to promote students active involvement throughout the lesson.

**6.3.2.3. Difficulties in implementation and ways to alleviate them.** The interviewed teachers expressed their opinions regarding the challenges. One of the interviewed teachers (T2) commented: “The CL lessons took more time maybe that is because my students and I did not experience that before. In addition, the students’ interactions needed time and the culmination points needed to be meaningful.” To the other teacher, challenge was attributed to the nature of the subject matter. For example, in the Jigsaw lesson, the learning contents of ‘reliability estimation’ were tough for students to understand. Regardless of this, the teacher interviewees highlighted that some students did not meet their expectations of accepting individual responsibility while some others had a type of dependency syndrome. One of the interviewed teachers (T1) commented:

There was a dependency on the part of some students, which may be attributable to their learning styles. For example, some students might be auditory and would like to listen. The other attribution may be ability difference and the resulting difference in self-esteem. When you combine students of low academic ability with students of high academic ability, the students of low ability may have low self-esteem leading them to give more chances to speak to the able ones.

The teacher participants also affirmed that part of the reasons for students’ inability to take individual responsibility was because of teacher limitations in carrying out their facilitative role. For example, one of the interviewed teachers (T1) pointed out: “Many students of the different groups raised their hands simultaneously asking for help, which was difficult to be managed by a single teacher.” Also, the other teacher (T2) commented on his own teaching approach in the CL lessons:

At the start, I was more inclined to lecturing than thinking of the students learning experience. That might be one of the reasons for the less engagement of my students and some confusion created at the start. I recognized many of the responsibilities of a facilitator quite after sometime. Being able to facilitate my students learning through the CL activities was appealing and useful.

In addition, the interviewed teachers noted that the classroom set up was not suitable to conduct the CL activities due to inconvenient chair arrangements and untidy black and white boards. The boards inhibited the implementation of CL lessons, in terms of clearly communicating instructions for the different learning tasks and the provision of brief information. The participant teachers utilized different strategies to alleviate challenges including, reduced provision of direct answers, instead adding more probing questions while they monitored and followed up students' small group work.

They also perceived that their students made additional efforts, frequently pursued clarification on the discussion points, and helped each other by explaining and further elaborating issues. Moreover, it was suggested that, at the course design stage, the researcher should spend more time understanding the epistemology of the subject and endeavouring to differentiate pedagogies since that would provide the opportunity to maximize students learning. It was also suggested that students be included in the lessons review, at least, for the first 2-3 lessons.

Interviewed students identified four major challenges affecting the implementation of CL classroom practices. These include difficulty of the CL tasks, time constraints, students lacking background and necessary preparation, and teachers' oversights in not concluding discussions. In terms of the CL tasks, a male student (S1) confirmed that the CL tasks were challenging since they demanded that they complete specific learning tasks, and thus were more time consuming compared to the regular activities in the lecture sessions. Also, another male student (S3) noted the challenge that originated from the required learning tasks because they were often unfamiliar to them.

As one interviewed female student (S2) and another interviewed male student (S8) described, all students were supposed to be responsible for their own learning, share responsibilities, and work towards a common goal, but a few students did not seem to be accountable for that. Another interviewed male student (S4) commented that the teacher sometimes did not conclude the lesson after taking different

concepts or answers from students. Also, the interview participants gave general comments about the project and its future directions. An interviewed male student (S4) and another female student (S6) suggested that students need to be orientated to the CL pedagogies earlier. They also recommended that the CL activities should be embedded in lessons more than they were in their course, and other course teachers need to adopt a CL approach. Other comments about CL included, more opportunities for engagement of medium and low ability students and silent listeners, as opposed to teacher-led instruction.

#### **6.4. Discussion**

This study examined the quality of instructional practices and student outcomes of two courses developed according to a CL approach to instruction. Before the main analyses, the study explored the characteristics of the variables used in the scales. This study obtained an inter-correlated four-factor solution corresponding to the proposed pedagogical domains representing the construct. These multiple indicators of CL pedagogies were shown to have strong convergent validity within each subscale (Table 1), as well as, discriminant validity from one another (Figure 2).

The strong correlation between teaching effectiveness and cooperative interaction might be due to their intimacy and integration. As students become aware that their teachers genuinely care about their learning, they respond positively by exerting greater effort to reach their potential (Lumpkin, 2007). In contrast, the existing weak relationship between teaching effectiveness and academic challenge might be due to practical differences that effective teaching is about caring and interaction (Shulman & Shulman, 2004) while academic challenge is intellectual or cognitive process (Hennessy & Evans, 2006). Also, this may be because effective teaching is predominantly what the teacher does while engagement in academic challenge is exclusively what the student does (Biggs, 2012).

The descriptive statistics showed that CL pedagogies had meaningful benefits in terms of creating significant learning experiences for the students. These benefits largely emanated from cooperative interactions among students, their task orientation, emphasis on academic challenge, and teaching effectiveness. When these influences interact with instructional processes they greatly facilitated the students learning in class and increased their satisfaction and gains.

This study findings are consistent with other research reports that testify the learning benefits of interactions among students (Wilkinson & Fung, 2002), and the differential effects of factors related to classroom instructions (Fink, 2007; Levine et al., 2008; Umbach & Wawrzynski, 2005). An intervention study indicates the complexity of the effects of inquiry-oriented activities on a range of college outcomes (Hu, Kuh, & Li, 2008). In another study, researchers conducted meta-analysis of 109 studies and identified psychosocial factors such as perceived social support, social involvement, academic-related skills, and contextual influences as important factors, among others, in predicting learning outcomes (Robbins et al., 2004).

Seen from a different perspective, there is empirical evidence that shows the richness of diversity of CL methods and their multiple effects (Bullard & Bullock, 2004; Cavanagh, 2011; Johnson, et al., 2007; Sharan, 2010a; Steven, 2007). In a meta-analysis of hundreds of intervention studies, researchers reported differential effects of CL upon multiple students' outcomes including academic achievement, interpersonal relationship, social support, attitude and self-esteem (Johnson & Johnson, 2002a). Consistent with these empirical reports, this study finding indicated that the relationships among pedagogic variables and the measured outcomes show differential effects. For example, the students' perceived academic challenge in the CL activities seemed to have a significant positive effect on their self-reported gains, whereas no relationship was found on their satisfactions with the CL environment. Umbach and Wawrzynski (2005) presented similar results: Emphasis on higher-order activities does not significantly relate to perceptions of support or satisfaction, however, undergraduate students reported greater gains in general education in those institutions where teachers emphasized higher-order activities in their courses.

As the interviewed students noted, their learning experiences in the CL activities provided them several benefits. Of the stated items, the major once include: The variety of activities, increased interpersonal relations, participating in small-group and whole-class discussion, and the teacher's support. Also, there are teaching benefits identified by the teacher participants, in terms of, increasing teaching effectiveness via creating opportunities for wider coverage of contents, sharing teaching responsibilities with the students, and integration of ideas and concepts. However, there are local constraints hindering the implementation of CL activities such as time, unfamiliarity, lack of preparation, and lack of equally sharing responsibilities for common goals. These findings suggest that CL pedagogies

enhance the ways teachers teach, and students engage with meaningful learning experiences.

In Ethiopian universities, classroom instruction takes a traditional content-centered approach, without due concern for the learning experience of the students (Moges, 2010). Moreover, there is a shortage of empirical work that shows whether changes in the approach to classroom instruction make a difference, or how instructional conditions might be related to student outcomes (Kenea, 2009). The CL approach applied in this study, and the identified positive results for the students of the two courses provide initial evidence-base to promote changes in classroom instruction from a traditional content-focused approach to a CL approach. Also, it used to be the case in the Ethiopian universities that the assessment of teaching quality assumes predominantly teaching behaviours and course contents (Zerihun, et al., 2012). Thus, universities did not consider other parameters of teaching quality with quantitative assessment. This study found out that the different pedagogical dimensions and student outcomes could be effectively measured, and their relationships could be assessed. Therefore, these six areas can be included as important aspects of quality assessment.

### **6.5. Study Limitations**

This pilot study revealed the potential roles of a CL pedagogic approach in terms of increasing student engagement and learning. However, the minimum sample of participants, and inclusion of only two courses make generalizations from this study problematic. Furthermore, this CL pedagogic intervention was conducted for the first time, but the students increased number of hours engaging in the CL activities both in-class and out-of-class per week may have greater influence on the students engagement and learning. Therefore, acknowledging these limitations is important when reviewing the results of this study.

### **6.6. Future Research Directions**

The positive results found in this study stimulate interest to assess the efficacy of the CL approach across other courses of the different disciplines. Also, increasing the participants and the courses involved would be valuable to determine the generalizability of the results found in this study. Assessing the potential advantages

of using this CL approach compared to the traditional lecturing approach helps to determine the comparative advantages of using this approach.

### **6.7. Conclusions**

Overall, the CL pedagogy appears to be relevant for higher education teachers, keen to promote the quality of student engagement and learning. Through CL experiences, students can maximize their own learning, and assist colleagues to achieve more from classroom learning, and teachers can use several strategies to promote these. These positive outcomes reinforce the fact that CL approach has a major impact in instructional reform, by refocusing teachers' attention on the pedagogical changes that are powerful to improve the quality of students' learning.



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## **Chapter Seven: Moving Beyond Lecture: Integrating Cooperative Learning Pedagogies with the Traditional Lecture-Based Instruction in Undergraduate Courses in Ethiopia**

### **Abstract**

The purpose of this study was twofold: (a) to examine the relative effectiveness of informal cooperative learning (CL) approach compared to the traditional lecturing approach, in terms of, promoting effective educational practices, and the student learning experience; and (b) to investigate the contextual factors and conditions surrounding the implementation process of informal CL pedagogies. Four instructors from four disciplines, and their students ( $N = 330$ ) volunteered to participate in this project. While one section from each discipline was taught using the lecture-driven method; the other section was taught via an integrated approach that combines informal CL and traditional lecture. After the intervention period the researcher assessed the students in each section with a survey questionnaire that was prepared and piloted with earlier research. Findings indicated that significant differences in results were found across the intervention period, for students in the four courses. Compared to students attending the traditional lecture, students attending the integrated instruction achieved higher scores of teaching effectiveness, task orientation, and learning satisfaction, with effect sizes ranging from 0.38 to 0.42, indicating moderate effects. A further assessment of causal relation showed that participation in the intervention significantly predicted the three measured constructs,  $\beta \geq .19$ ,  $p < .001$ . Also, the qualitative interview data showed that teachers viewed their participation in the integrated instruction as appealing and useful to transform instructional practices. Similarly, the interviewed students saw their experiences with the informal CL activities as relevant and joyful. This study provides supporting evidence in which significant differences in the students' engagement and learning can be achieved through designing and implementing courses using informal CL activities.

*Keywords:* classroom instruction, Ethiopian, higher education, informal cooperative learning, integration, teaching and learning

### 7.1. Introduction

Teaching and learning is more than just a matter of transmitting information from the teacher to the students (Smith, et al., 2005), however, too often it is conducted in that way, particularly in the higher education classes (Hennessey & Evans, 2006). It is usually the case that instructors present learning material via lecture, even if, the material might be readily available to distribute in advance in printed form (Wen, 2010). When it is examined from the students' perspective, the main purpose of lecture seems just to writing down as many notes as they can. In such case scenarios, only few students have the ability, motivation, courage and capability to synthesize all the information delivered to them (Johnson, et al., 2007). No question that learning deeper (going beyond memorization) is perhaps the most important and the most elusive aspect of instruction (Smith, 2000).

Cooperative learning (CL) is important for a successful educational reform that demonstrates "how far schools and universities have moved beyond the transmission modes of learning for more complex, knowledge building practices that engage the many different students" (Brody, 2010, p. 1). CL is flexible with wider latitude of application making it applicable to different instructional demands (Gillies, 2007; Hennessey & Evans, 2006). It is important to make the students active in the classroom by maintaining the dynamics within and making learning enjoyable and satisfying for teachers and students (Bossert, 1989). It is also important for the development of higher-order thinking, prosocial behaviour, and interracial/ethnic acceptance, as a way to manage academic heterogeneity in classrooms (Cohen, 1994). Moreover, CL helps to achieve a socially just, more equitable society through provision of tools for students to solve problems and resolve conflicts (Sharan, 2010a).

The new economies of the twenty-first century require new approaches to learning and teaching from higher education (HE). Accordingly many universities have gradually scaled-up learner-centered approaches, including flexible delivery and instructional innovations to enhance students' engagement and learning (Zepke & Leach, 2010). Regardless of this, there is empirical evidence suggesting a decline of quality in the higher education system in Ethiopia. This is mainly due to rapid expansion without a matching increase in resources and internal capabilities. Furthermore, very little research has been carried out on the pedagogical practices of academics and the educational environment within Ethiopian universities so little

is known about how students learn and how learning can be enhanced. The main focus of this study is to examine the improve the quality of teaching and learning through an integrated focus on the design and implementation of cooperative learning pedagogic interventions in the university undergraduate classroom context in Ethiopia.

### **Objectives**

This study was designed to determine the relative worth of integrating informal CL with the traditional lecture approach based on quality indicators. The quantitative aspect of this study focuses on the comparison of the scores for the students who attended classes via the traditional approach and those who attended classes with the integrated approach. The qualitative interview was conducted to elicit information from the selected study participants regarding the quality of the educational practices, the factors and conditions affecting implementation, and the benefits rendered.

## **7.2. Methods**

### **7.2.1. Research Design**

This study, as a continuation of the previous intervention study, applied a case study method (Stake, 1983) with a focus directly to the design and implementation of informal CL pedagogies. Both quantitative and qualitative data (Guba & Lincoln, 1983; Scriven, 1983) were used to examine the educational practices and the student learning experiences in comparative perspective. A quantitative study model and a qualitative analysis framework were developed to guide analyses in subsequent sections. The necessary data was collected after obtaining informed consent from each participant.

### **7.2.2. Participants**

Instructors for four undergraduate courses in four different disciplines participated in this informal CL study. The courses included: 1) Biology: Molecular Biology; 2) Chemistry: Instrumental Chemistry, 3) English Language and Literature: Discourse and Pragmatics, and 2) Law School: Gender and Law. In these four courses, 169 students of 2<sup>nd</sup> year, Biology major and Chemistry major and 161 students of 3<sup>rd</sup> year, English Language and Literature major and Law major



participated. While the total participants were 358, a total of 28 (8%) students excluded from the analyses due to excessive loss of the required data. Thus, the student sample included ( $N = 330$ ) students (166 intervention group and 164 comparison group). The 4 instructors and 24 selected students participated in the interview. The student interviewees are selected using maximum variation sampling and included 6 students from each discipline with a proportional representation of students by gender and CGPA.

Table 8. The distributions of participants by group, gender, department, and classification ( $N = 330$ )

Class Year	Department			Gender		Total
				Female	Male	
2nd year	Biology	Participant	Intervention	15	26	41
		group	Comparison	14	22	36
		Total		29	48	77
	Chemistry	Participant	Intervention	6	41	47
		group	Comparison	6	39	45
		Total		12	80	92
3rd year	English	Participant	Intervention	1	27	28
		group	Comparison	4	33	37
		Total		5	60	65
	Law	Participant	Intervention	12	38	50
		group	Comparison	4	42	46
		Total		16	80	96

### 7.2.2. Description of Intervention Program and Services

Cooperative learning as a pedagogic intervention is one of the functional interventions demonstrated that produces positive results when used in schools irrespective of the level of schooling (Johnson, et al., 2007). This study used an informal CL model comprising of five interrelated entities: (1) focus on the students learning and attainment of other outcomes, (2) build relationships, (3) develop capacity both for teachers and students, (4) persist the learning steps across learning activities, and (5) provide support for implementation of the new pedagogies.

The informal CL activities comprised of three variants: Think-pair-share, Think-share-pair-create, paired heads together. The start of these activities included an individual thinking and writing tasks. This was so because participant students have to start the construction of own learning. While this stimulates interest and facilitates further pair-group discussions, it also encourage each student to be individually accountable for own learning. After the pair work to co-produce learning,

the student participants reconstitute in to another small groups of 4 members in each group so that they had time to discuss and further shape up their own learning. After the completion of this small group member's work, the whole students of each section form a whole class discussion with the teacher. Here, voluntaries from each small-group share group consensus with a conscious randomization of participating members from each group, and encouraging other members to participate in the whole class discussion. While a single informal CL activity lasts between 5-10 minutes, a single session consisted of 2 to 3 informal activities per session. Table 9 presents some examples of informal CL activities across the four courses.

Table 9. *Examples of informal CL activities incorporate across courses in four disciplines.*

Example	Duration	%	Course
<b>(Think-Pair-Share)</b> CL Activity 1: Differentiating nucleosides from nucleotides. 1. Distinguish between primary, secondary and tertiary structures of DNA	5 Min	<sup>a</sup> 30%	Molecular Biology <sup>1</sup>
<b>(Formulate-Share-Listen-Create)</b> CL Activity: The process of DNA replication 1. How does a DNA replicate? 2. Is DNA replication conservative, semi-conservative, or dispersive? Please give reasons for your response.	10 Min		
<b>(Think-Pair-Share)</b> CL Activity: Characteristics of transducers 1. List allowed spin state with spin quantum number 2 and 5.	10 Min	30%	Instrumental Chemistry <sup>1</sup> (Chem 322)
<b>(Paired Heads Together)</b> CL Activity 2: Analyse 5 different structures & sort out structurally equivalent hydrogens? 1. How many hydrogen are equivalent? 2. Which type is locating Upfield?	5 Min		
<b>(Formulate-Share-Listen-Create)</b> CL Activity: Oral and written discourses 1. What are the advantages and disadvantages of using oral and written discourses?	10 Min	20%	Discourse and Pragmatics <sup>2</sup> (EnLa 424)
<b>(Think-Pair-Share)</b> CL Activity: Why equality? 1. Why equality is important, what are the justifications behind equality?"	5 Min	30%	Gender and Law <sup>2</sup>
<b>(Formulate-Share-Listen-Create)</b> CL Activity: Approaches to incorporate equality theories 1. What are the approaches used to incorporate equality theories in the Ethiopian constitutions?	10 Min		

Note: <sup>a</sup> the lesson was at least in two parts, <sup>b</sup> the lesson has three parts

### 7.2.3. Prior to Intervention

Before the start of this intervention, the researcher gave a staff development workshop on the different CL pedagogies for the intervention teachers. The selection of teacher participants for the intervention was made based on interest and the teaching assignment of a major course in each discipline. A total of 20 teachers involved in the training (18 from each discipline, 1 from Academic Development Centre, and 1 from Quality Assurance Office), but only four teachers were selected for the intervention study based on the criteria of teaching courses at least for two groups of the same year. Also, consideration was given to maintain gender balance.

Participant students of the intervention had a similar training on student engagement and cooperative learning techniques. A total of 128 students from the four disciplines participated in the training prepared for each department separately. The topics covered in the training were much similar for both the students and teachers with slightest modification to suit them. All the participants described the training as interesting and relevant as it was a new pedagogy. Almost every participant appreciated the essence of CL instruction and how it differs from the usual discussion they used occasionally. During the training, almost every participant expressed that the cooperative learning did not happen for them in any staff development or other teaching and learning experiences. However, teachers were entirely hesitant for the practicability of making that happen in the actual classrooms. Students, in particular, expressed their positive feelings about the recognition they were given and the knowledge they gained from the training.

### 7.2.4. Data Sources

**Questionnaire.** A questionnaire comprising of items used to measure the teacher's pedagogic practice, student's task orientation, and their learning satisfaction was applied. This survey is used to assess the quality of the instructional process and the learning outcomes achieved as a result of participating in the CL intervention. The items used in this survey are part of a pilot study reported in chapter 6 of this doctoral dissertation. Through the different items participants were asked to think about their experience in the informal cooperative learning lessons and their perceived satisfaction while reading statements and indicate how true the statements were for them. Teaching effectiveness items began with, "Based on your experience in this course, please rate the quality of teaching on the following

points?” and were scaled 1 (*Poor*) to 4 (*Very Good*). Task orientation items began with, “During your class of this course, about how often have you done each of the following?” and were scaled 1 (Never) to 4 (Very Often). The remaining satisfaction items began with, “How would you evaluate the level of satisfaction you and your class students benefited from the learning experience of this course?” and was scaled 1 (Very little) to 4 (Very Much). Appendix B presents the questionnaire.

**Semi-structured interview.** The teacher and student participants were interviewed separately using the first author’s semi-structured interview protocol which was used as part of this doctoral study and reported in chapter 6. We conducted one-on-one interviews with teachers and students as one source of data collection. Interviews ranged between 20 to 30 minutes and focused on a series of questions that asks the participants for their views on the following themes: (1) general perception about their experience in the informal CL lessons; (2) aspects of informal CL they have seen as strength; (3) examples that reflect this strength; (4) the teacher’s roles and the students’ responses in the informal CL lessons; (5) some of the challenges they have faced; and (6) their general comments about the informal CL lessons in general.

#### **7.2.5. Study procedures**

Each class of students in each discipline was randomly assigned to either the intervention group or the comparison group. Instructional delivery of the intervention groups included informal cooperative learning blended with the conventional teaching methods while the comparison group attended classes with the traditional lecture as that form of teaching was most common. A post intervention questionnaire was administered both for the intervention groups and the comparison groups to elicit the views and reflections of participants based on their experiences.

#### **7.2.6. Data Analysis**

The quantitative data were entered into Stata 12 statistical analysis and software package (Cleves, 2008), and both descriptive and multivariate statistical analyses were used as needed. From the multivariate analyses in particular, correlation and multivariate regression analysis were applied. Qualitative data obtained from interviewing the participants were content analysed using a thematic approach (Creswell, Hanson, Plano Clark, & Morales, 2007). The data were

triangulated to facilitate validation of data through cross verification of results. A quantitative study model and a qualitative interview framework were developed to guide analysis and are presented in the results part of this study.

### **7.2.7. Specifications of the Quantitative Study Model**

In the literature, that study about the effects of a pedagogic innovation as well as student engagement, it is quite common that researchers use several outcome measures to capture possible influences of the intervention as basis of evidence (Gillies, 2009; Joseph, 2004; Pascarella, 2006). The idea is that an intervention can bring desired effects and unexpected consequences, and having wider latitude of effect measures enables to capture the potential effects (Muijs & Reynolds, 2011; Shahidur, Gayatri, & Hussain, 2009). Recent conceptualization of the taxonomy of significant learning developed by Fink (2003), and the multidimensional construct, student engagement comprising of the student, the teaching, and the institutional aspects of quality issues (Coates, 2010) signify that the quality of education can be represented in multiple forms: possible proxy and outcomes.

Cooperative learning is one of the pedagogic strategies used to promote student-centered learning (Smith, et al., 2005). Cooperative learning researchers mainly emphasize five pedagogic conditions accounting for the success of a cooperative learning approach. These five factors include individual accountability, social interdependence, promotive interaction, group processing, and social skills (Gillies, 2007). However, the outcomes of these cooperative conditions measured on several outcomes including academic performance, social gains, and psychological health (Johnson & Johnson, 2002a; Sharan, 2010a). In a meta-analysis, researchers identified several dimensions as indicators of the relative effects of cooperative learning compared to individual and competitive class arrangements and consistently found that cooperative learning is the most preferred and useful pedagogic approach for teachers and students (Johnson, et al., 1998, 2007).

### **7.2.8. Reliability analysis and Confirmatory Factor Analysis**

For a quality indicator to be used for comparison purposes, first the selected construct should be tested for its validity and reliability. Most of the time comparison studies failed to be accepted based on issues related to scientific rigour and methodological accuracy (Pascarella, 2001b). With the intent to establish validity and

reliability of the survey instrument, this study conducted reliability tests, and confirmatory factor analysis using structural equation modeling (*SEM*). This approach is a robust validation approach that provides empirical evidence about validity and reliability with advanced statistical tests and measurement indices.

The main intent with the quantitative investigation of this study is to examine the interrelationships of the three factors used to measure the effects of informal CL intervention, and then identify the predictions of these three effect measures from group participation after accounting for controlling variables. For this, the study used both correlation analysis and multivariate regression analysis. Below, the results of these analyses will be presented.

A correlation test and reliability test were conducted across the three measures. The findings show that interrelationships among the three quality indicators are all positive and range from moderate to very high correlations. Table 10 presents the reliabilities and correlation summary result.

Table 10. Reliabilities and correlation summary results for the pedagogic factors and outcome measures

Factor	Item	Obs	Mean	Mean %	SD	Min	Max	Inter-item Corr.	Alpha $\alpha$
Teaching effectiveness	teff1	337	3.5	88	0.66	1	4	.43	.84
	teff3	337	3.4	85	0.72	1	4	.43	
	teff4	337	3.6	90	0.63	1	4	.43	
	teff5	336	3.5	88	0.70	1	4	.43	
	teff6	337	3.4	85	0.76	1	4	.42	
	teff7	337	3.2	80	0.91	1	4	.44	
Task orientation	tori1	330	3.3	83	0.73	1	4	.43	.83
	tori2	330	3.5	88	0.72	1	4	.43	
	tori3	330	3.3	83	0.74	1	4	.43	
	tori4	329	3.3	83	0.73	1	4	.43	
	tori5	329	3.4	85	0.61	1	4	.44	
	tori6	330	3.3	83	0.74	1	4	.44	
Perceived satisfaction	sati1	332	3.4	85	0.72	1	4	.43	.88
	sati2	332	3.4	85	0.70	1	4	.42	
	sati3	332	3.4	85	0.73	1	4	.43	
	sati4	332	3.4	85	0.76	1	4	.42	
	sati5	332	3.4	85	0.73	1	4	.42	
	Test scale							.44	

As shown in Table 10, the average inter-item correlation is .44, and the alpha coefficient for the test scale based on all items is .93. Here these figures imply that all the items used in the scale seem to fit well in all respects. The item-test correlations and the item-rest correlations are strong for all items. Moreover, the average inter-item correlation is stable so no need of removing any of the items. In sum, each item used in this scale correlates strongly with each other. Finally, the Cronbach’s coefficient for each scale is sufficiently high with alpha ( $\alpha$ ) of .83 to .88, which testifies the usefulness of each item in the scale. To assess the extent to which the different variables in the scales correlated to each other a correlation analysis was conducted. The results indicated that the respective factors have positive correlations among each other’s. Figure 5, illustrates the relationships.

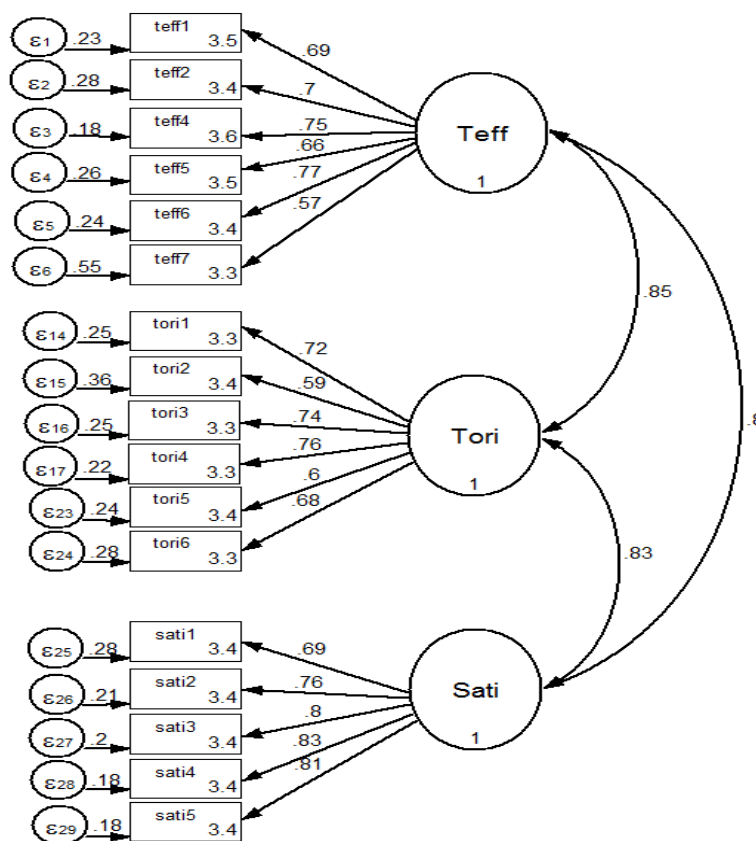


Figure 5. Factor structures of the teaching effectiveness, task orientation, and satisfaction scales. Rectangles represent endogenous/observed variables. Ovals represent latent variables.  $\epsilon_1$ ,  $\epsilon_2$ , and  $\epsilon_3$  denote residual terms representing unmeasured influences on endogenous variables. The figure was drawn with Structural Equation Modeling (sem). All the correlations are significant at .001 level.

As shown in Figure 5, the three sub-components have high correlations with one another, with  $r = .8$  to  $.85$ . The factor loading of each variable in the model is moderate to high correlation with a range between  $r = .57$  to  $.83$ . A further model adequacy test was conducted to examine the goodness of fit of this scale. As chi square statistics usually favours large sample size in testing model fitness, we used other additional practical indices to find adequate evidence of model fitness. The researcher gauged model fit through the comparative fit index (CFI; Bentler, 1990), Tucker-Lewis index, the root mean squared error of approximation (RMSEA; Brown & Cudeck, 1993), Standardized Mean Square Residual (SRMR), Coefficient of Determination (CD) as well as chi-square divided by the degrees of freedom ( $\chi^2/df$ ). CFI and TLI values  $> .90$ s, RMSEA and SRMR values less than 0.08, and  $\chi^2/df$  values less than 3.0 are all considered indications of good model fit (Schreiber, Nora, Stage, Barlow, & King, 2006; Yu, 2002).

In accordance with the three dimensional nature of the construct, we estimated a three-factor model, with the teaching effectiveness, task orientation, and satisfaction items loading onto their respective latent variables, which were allowed to inter-correlate. The model displaying the best empirical fit consisted of three factors. The fit indices for the hypothesized model were as follows:  $\chi^2$  (df,  $n = 340$ ) of 262.199 ( $p < .001$ ), TLI (.95), CFI (.95), CD (.99), RMSEA (.055), and SRMR (.038). The Chi square is significant ( $p < .001$ ) which is an indicator of poor fit. However, this is frequently the case because of its sensitivity to large sample. The remaining fit indices are excellent. These results showed that the hypothesized model is a very good fit to the data.

### **7.2.9. Data Analysis**

Across the four courses,  $t$  test and multiple regression analysis were applied. The  $t$  test used to determine if the informal CL approach compared to the traditional lecture is effective overall across the measured constructs. To do so, this study compared the average scores of students in the intervention group with the average scores of students in the comparison group, for each measured construct. The regression analysis used to determine the predictive validity of participation in the informal CL intervention after controlling the effects of other potential variables



### 7.3. Results of the study

#### 7.3.1. Summary results of *t* tests

An independent sample *t*-test was conducted for the data ( $N=330$ ) to determine whether there are statistically significant differences observed between the scores of the students in the intervention group and comparison group in terms of perceived teaching effectiveness, task orientation, and satisfaction. The tests suggest that there is a statistically significant difference in students' scores between the two groups, with students in the intervention group reporting higher scores on these measured variables compared to those from the comparison group. The effect sizes of the differences, as measured by Cohen's *d* is .38 to .42, which suggest moderate effect sizes of the differences between these groups (Table 11).

Table 11. Differences in students ratings of teaching effectiveness, task orientation and satisfaction between intervention group and comparison group

Factor	Intervention Group	Comparison Group	95% CI		<i>df</i>	<i>t</i>	Cohen's <i>d</i>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	LL	UL			
Teaching Effectiveness	.08 (.36)	-.10 (.45)	(.09, .26)		328.42	3.98***	.42
Task Orientation	.08 (.46)	-.11 (.51)	(.08, .29)		336.56	3.55***	.38
Learning Satisfaction	.09 (.42)	-.11 (.51)	(.10, .30)		330.45	3.98***	.42

Note. *CI* = Confidence Interval; *LL* = Lower Limit; *UL* = Upper Limit; *df* = degrees of freedom; Cohen's *d* = Effect size.

The means and standard deviations were computed using the regression method and saved as standardized scores with a mean of zero and a standard deviation of one.

Effect size  $\delta$  is defined as the ratio of the difference between the mean values of intervention group and comparison group over the pooled standard deviation,  $\delta = (\mu_1 - \mu_0) / \sigma$ .

Significance levels. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

As shown in Table 11, results indicated significant differences in the average scores between intervention group and comparison group across the three measured constructs. In terms of teaching effectiveness, there is higher scores by the intervention group ( $M = .08$ ,  $SD = .36$ ) than the comparison group ( $M = -.10$ ,  $SD = .45$ ),  $t(328.42) = 3.98$ ,  $p < .001$ . Similarly, with regard to task orientation, there is higher scores of the intervention group ( $M = .08$ ,  $SD = .46$ ) than the comparison group ( $M = -.11$ ,  $SD = .51$ ),  $t(336.56) = 3.55$ ,  $p < .001$ . Also, regarding learning satisfaction, there is higher scores of the intervention group ( $M = .09$ ,  $SD = .42$ ) than the comparison group ( $M = -.11$ ,  $SD = .51$ ),  $t(330.45) = 3.98$ ,  $p < .001$ . Overall, there

is an average higher score of students in the intervention group than the comparison group.

### 7.3.2. Regression Models

The participation group was dummy coded with the intervention group coded as 1 and comparison group coded as 0. A two-step multiple regression analysis was used to determine the predictive validity of “participation group” with the informal CL group in impacting the criterion measures of teaching effectiveness, task orientation, and learning satisfaction. For this, the study first used the squared semi-partial correlations as criteria for predictor selection. As per the results of these analyses, participation in group, department or major discipline and college attended were found potential predictors (Table B1). After this, three multiple regression models were designed through the applications of structural equation modeling to frame an overall model and to analyse, which of the predictive variables have the strongest influence on each of the measured construct. Figure 6 presents the pictorial representation of the regression models.

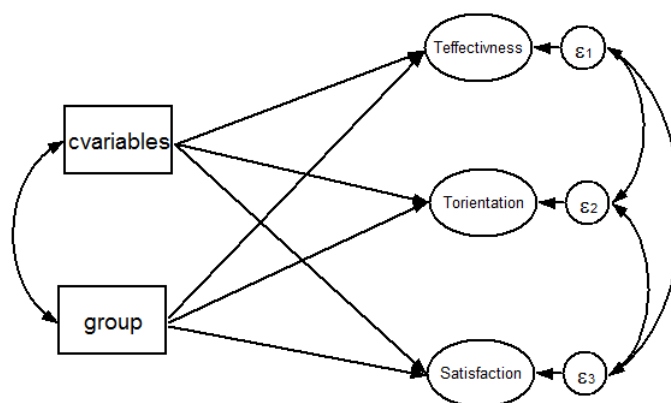


Figure 6. The regression models for predictions of teaching effectiveness, task orientation, and satisfaction from controlling variables and group participation.

Rectangles represent endogenous/observed variables. Ovals represent latent variables.  $\epsilon_1$ ,  $\epsilon_2$ , and  $\epsilon_3$  denote residual terms representing unmeasured influences on endogenous latent variables (Teffectiveness, Torientation, and Satisfaction).

### 7.3.3. The general model

A two-step multiple regression analysis was performed using teaching effectiveness, task orientation, and learning satisfaction as criteria and group participation, college attended, and department or major discipline as predictors in order to determine if the scores of teaching effectiveness, task orientation, and

learning satisfaction could be predicted as a function of participation group, after accounting for the controlling variables department and college. The analyses were found to be statistically significant across the three predictions (Model1.  $F[3, 336] = 41.93, p < .001$ , Model2.  $F[3, 336] = 48.95, p < .001$ , and Model3.  $F[3, 336] = 41.65, p < .001$ ), indicating that participation group, department, and college attended are good predictors of teaching effectiveness, task orientation, and learning satisfaction. The overall model predicted 27% of the variance in teaching effectiveness, 30% of the variance in the task orientation, and 26% of the variance in satisfaction.

Table 12. A Two-step Multiple Regression Analysis Predicting the Teaching Effectiveness, Task Orientation, and Learning Satisfaction ( $N = 330$ )

Predictor	Model1 Teaching effectiveness		Model2 Task orientation		Model3 Learning satisfaction	
	Adj $R^2$	$\beta$	Adj $R^2$	$\beta$	Adj $R^2$	$\beta$
Step 1						
Control Variable <sup>1</sup>	22***		26***		22***	
Step 2						
Group Participation <sup>2</sup>	5***	.21***	4***	.19***	4***	.21***
Total Adj <sup>3</sup> $R^2$	.27***		.30***		.26***	

Note. <sup>1</sup>Control variables include college attended and department or major discipline.

<sup>2</sup>The reference group is intervention.

Significance levels. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

It is clear from Table 12, that the changes in  $R^2$  across the three predictions after accounting for controlling variables were 4-5% of the variability, as indexed by the adjusted  $R^2$  statistics. It is clear from the results for the total group that “participation group” significantly predicted teaching effectiveness,  $\beta = .21, p < .001$ , accounting for 5% of the variance. In addition, “participation group” significantly predicted task orientation,  $\beta = .19, p < .001$ , accounting for 4% of the variance. Also, “participation group” significantly predicted scores on learning satisfaction,  $\beta = .19, p < .001$ , accounting for 4% of the variance. .

#### 7.3.4. Results of Interviews with Teacher and Student Participants

**Conceptual framework for analysis of interview transcripts.** The students’ and teachers’ qualitative interviews were organized based on a similar thematic analysis framework reported in chapter 6 of this doctoral dissertation. The themes comprise: 1) general perceptions, values, and attitudes on informal CL pedagogies, 2) participants’ lived transformative experiences as a result of participation in the

informal CL classroom practices; and 3) difficulties faced during implementation and how it was approached. These conceptualizations provide theoretical outlines of the qualitative interview data and guide analyses in subsequent sections. In this analysis, the interview participants have been divided into two groups: 1) The teacher group (T) represents teachers' participants in the pilot intervention; and 2) Student group (S) represents the students who participated in the interviews.

#### **7.3.4.1. Teacher participants' interview results.**

***Teachers perceived opinions and values about informal CL lessons.*** The participant teachers viewed informal CL pedagogies as more practicable and more enjoyable. They viewed the benefits from two perspectives: the student's and the teacher's sides. From the students' side, issues highlighted include: 'what sort of activities the students did?' and 'what the students have benefited?' The second one is from the teacher's perspective in terms of assessing the extent to which informal CL activities have contributed toward achieving the course objectives and how the informal CL activities have maximized the teacher's roles in handling classes.

***Teachers lived transformative experiences with informal CL lessons.*** In most of the informal CL activities, students have been actively engaged in sharing their personal thoughts and feelings and listening to others ideas. This encouraged more student-student interaction. One teacher participant (T2) noted:

The informal CL pedagogies created a more positive environment for students who are shy, particularly females to freely participate without feelings of embarrassment. Most of the students actively participated in generating ideas. There were hot discussion between students and they freely asked me for idea that was not clear for them.

The other interviewee (T3), a female teacher participant, has a similar view:

In the traditional approach, it used to be the case that most students were passive listeners and only those high performing students did contribute in the class participation. But in this informal CL approach, as I felt about it is a bit more engaging and provided a bit more opportunity for low performing students to engage in learning and to feel more responsible. Low performing students appear to be more encouraged to contribute. Previously these students were indifferent but now the CL lesson included them and they are now more responsible about their own learning. This informal CL helped students to be responsible for their own learning to some extent. The other thing what I feel about informal CL was that almost all students were accountable for their own learning. Students got the opportunity to

share ideas and learn how to work with others and tolerating others or approaching others in non-threatening way.

One teacher (T1) summarized his preparation for the informal CL lessons, its instructional condition and how it affects students' willingness to perform:

I was more stimulated to think of learning activities, I mean I was concerned to bring relevant activities for my students that could help them achieve the learning objectives. Always before the CL lessons, I was asking myself what type of activities can I create to make my students active? This was significantly different from what I did previously with the traditional approach. To be honest, previously I was prepared only on the subject matter and my concern was more on how to deliver the course without a feeling of how the students can learn. Earlier I used to involve few students, particularly those who are clever enough to quickly respond teacher's questions. But with this informal CL approach, every student actively participated.

The other participant teacher (T3) added:

In those informal CL activities everybody was trying to write something, read or talk, which are indications of their active engagement in learning. In every informal CL lesson, I used to ask my students randomly and everybody was able to present ideas and thoughts without fear or failure. So I can say every student has contributed. In my view, the informal CL activities enabled every student to share his/her own views on some points of discussion. Such activities were relevant to encourage students to be accountable for their own learning. Through the informal CL lessons my students did learning activities that demanded them to think critically, to see relationships, and assess or examine ideas and thoughts. I think, this is a critical point of departure from the traditional lecture class.

In terms of the informal CL advantages for analysing and discussing course contents, another intervention teacher (T4) commented:

My students critically analysed the different aspects of a certain theory through their pair work and later on the whole class discussion. May be that is an indication that the students can work out things beyond what has been found to be in books and other similar sources. So providing students the opportunity to share ideas and argue on certain theories through different informal CL activities could be very important for students to thoroughly understand course contents.

The informal CL pedagogies also had the most positive impact on teacher's willingness, capabilities and performance of creating a quality student-learning environment. One teacher (T2) clearly saw

Earlier it used to be the case that I made all my preparations on the content part but now I am concerned with the learning experience as well. When the lecture was decomposed into two or three small bits and has some informal CL activities in-between, then the lesson will be more interesting or exciting as the students engage in different learning tasks. Also the informal CL pedagogies helped me to understand my students, particularly knowing what they can do, if they have been given relevant educational experiences.

As the other teacher participant (T1) described:

In my view, this informal CL pedagogy gave me relief since lecturing continually is boring and tiresome. The informal CL activities are more fun and provided me the opportunity to get connected with my students, identify students learning problems, and providing solutions. Unless you diagnose you won't be able to understand the real learning problems out there.

The words and phrases that the intervention teachers used to describe the students' participation in the informal CL lessons were: "generating new ideas and concepts," "sharing experiences," "supporting one another," "freely asking one another," and "listening to one another." Both teachers in biology and chemistry courses noted that most of the students in their classes of informal CL groups learned to relate to and communicate with one another.

***Difficulties encountered in implementation and ways to alleviate them.***

Intervention teachers commented how the contextual factors had created a host of problems in their teaching-books not available for students, classrooms never being tidy and organized for teachers so they ended up with a poor room arrangement and lighting for their course delivery purposes, computers being available in classroom, but irregularly functioning for course activities, inequitable participation, time management, class size, and the list goes on. One teacher (T3) commented: "unless you gave them something to read, in advance, and help them to study ahead, the classroom learning and discussion would be declining." The other teacher (T2) described issues of preparedness and equitable participation as follows:

Sometimes students had uncertainties on what they were doing. Hence most students tended to get my approval and additional explanations on what they were doing. This informal CL activity consumes too much time and requires resources so that handouts should be prepared in advance. Sometimes, students failed to engage in learning due to lack of the required pre-requisite knowledge and skills. Also, the students lacked the necessary preparations, for example, some students did not read the materials even their handouts prior to class. Some

students displayed more individuality than a sense of working with others. I think, sometimes students wanted to demonstrate their individual brave than group courage.

Despite these and other constraints, the intervention teachers took several measures to alleviate problems and conduct the CL lessons as planned. The strategies include among others: Motivating students, providing feedbacks, allowing small group members to consult other group's members, moving around and clicking the students. Also they created group competitions so that responses from the different small groups' were compared during the whole class discussion. One intervention teacher (T1) suggested how the practice of informal CL from the primary grades can serve a more lasting purpose to solve quality problems:

Even if I said that this approach is relevant and should be used for the different courses in my department ... this approach should be applied beginning from the lower primary grades so that the students would develop the social and group learning skills earlier. If this approach has been started from the lower grade level ... it will create a better academic culture.

And lastly, all the intervention teachers expressed their concerns that the informal CL pedagogies are applicable for other courses in their respective departments and suggested these pedagogies to be used across the different colleges.

#### **7.3.4.2. Student participants' interview results.**

##### ***Students perceived opinions and values about informal CL lessons.***

Student participants have described the informal CL lessons as important for more interaction, more engagement in learning, and more excitement with classroom learning. In the views of most of the interviewed students, they have got several benefits through their participation in the informal CL activities. Interviewed students such as: S9 and S21 saw their experiences with the informal CL as more of enjoyments than series acts. Others (S2, S13, & S20) noted that informal CL activities offered them opportunities to generate far better ideas and concepts than the concepts a teacher would present through lecture. Even being a participant in the informal CL supported reflection. A student (S7) said, "Now, I feel that having gone through this informal CL lessons definitely my interactions are becoming more important."

Many student interviewees in the four departments cited higher level of students' participation as the very reason they valued informal CL activities. They did

explain this benefit compared to their participation in the regular lecture. Most students described how they learned more actively in the informal CL groups compared to the usual lecture. One student participant (S5), a female biology major, described “We have got much understanding with the discussions in the informal CL groups rather than learning from the lecture.” Similarly, the other student (S23), Law major, explained “In terms of the extent of participation in class, I can say the informal CL lessons were better than the lessons we used to attend with lecture.”

***Students lived transformative experiences.*** When asked about their positive experiences with the informal CL groups, student interviewees identified ease of sharing ideas with others as a critical factor. One of the students (S5), a biology major student, said: “In the informal CL lessons we were asked to do something individually, and then, in pair so that we can get knowledge independently, and then through discussion in the whole class.” A couple of other students, S12 and S15, described how they motivated to willingly involve in the informal CL activities “working with anyone during the pair work was friendly.” In support of this, another two students (S7) and (S9), Chemistry major students, discussed a variety of positive experiences they received from the informal CL including development of a sense of responsibility for learning, interaction with one another as they learn, increased positive relationships, and opportunity to understand the lessons well. Similarly, student interviewees, Biology major and English major, felt being in the informal CL as an advantage to their increased classroom participation and better learning of the materials. Other positive aspects of informal CL were the development of personal values, a sense of better understanding, and inclusiveness that became more important over time. One of the interviewees (S10), a female chemistry major, shared that:

As to me the main concern in the usual lecture is covering contents. However, in the informal CL groups no one left the class without understanding because he or she has been participating in the individual tasks, so there is trying, and then sharing that with another partner, and finally to the whole class discussion. Hence there have been better learning opportunities in the informal CL class. That is why I said no one left the class without understanding.

Most of the interviewed students shared one of the student interviewees (S13) comments that:



In the other courses, some students who are shy and have less academic ability were forgotten or overlooked. I can say the lectures were not targeted for them. However, the different learning tasks of the informal CL lessons have been targeted to every student since everyone was at least involved in a specific learning task, for examples, defining a concept. Even the pair work and the whole class discussion provide further learning opportunities.

For the student interviewees in the Law major, the interesting thing about the informal CL was the presence of frequent opportunities to share understandings so that everyone was motivated to learn.

In the informal CL classes, teachers and peers were seen as good sources of motivation, encouragement, and support. Most of the participants agreed that their respective teachers helped their learning in the informal CL groups through guiding, monitoring, encouraging, and assisting. One interviewee (S10) clearly pointed that their course teacher has contributed for their learning through: "Providing explanations, assigning learning tasks and forming groups, supporting students to contribute in the discussions, and providing feedback with our work." Also, the other student participant (S4) mentioned that their teacher contributed for their learning through: "Guiding how to do the activities, motivating to do better, monitoring what we did and providing constructive feedback, assisting when we faced difficulties, answering our questions, and providing a summary."

Students also supported one another through different mechanisms. Most participants share the same view with one of the interviewees (S16) comments who stated that: "Students in the informal CL groups supported each other learning through encouraging participation, sharing knowledge, creating positive relationships, and asking questions." These results provide insight that course teachers, as well as, students served as sources of interaction and support. Through these activities students in the informal CL groups have a high degree of classroom participation, and develop conceptual understandings of course contents.

***Difficulties encountered in implementation and ways to alleviate them.***

However, some students (S1, S7, S13, and S15) worried that reduced involvement of the teacher during the informal CL groups, as well as, reduced volume of lecture could be barriers to what they were supposed to learn with the respective courses they are attending. In addition to this, a variety of other reasons were identified as challenges to effectively implementing the informal CL lessons. A student interviewee (S8) said: "lack of preparation on the part of the students and taking

much time in the small group work.” Students do not participate, for a range of other reasons beyond preparation. A couple of students from each department believed that some students of their respective classes may be shy, or others may be dominant in the discussion.” One interviewee (S3) pointed that: “There may be language problems.” The other student (S11) described, “Students may be fearful about classroom participation.” Moreover, student interviewee (S13) pointed that: “Actually, students’ ability difference was one of the sources of unbalanced contributions by the students”. All these challenges to some extent hindered effective implementation of the informal CL lessons and were found difficult for the students and the teachers. To cope with these challenges, student interviewees of each course witnessed that, the students and their teacher applied some strategies like advising, encouraging and assisting, and getting prepared before class, and time management.

#### **7.4. Discussion**

This study examines the fundamental issues of quality improvement through case studies of teachers implementing a project-based informal CL pedagogic intervention across four courses in four disciplines within the constraints of their own classrooms. Specifically, this study examined (a) the ways the informal CL pedagogy was contextualized within the existing classroom cultures; and (b) the interplay between the informal CL pedagogy, and the cultural context that surrounded classroom practice. The prime focus was to investigate the enactment of this CL pedagogy as it was used across four courses of four disciplines.

The study involved both quantitative and qualitative data. The quantitative aspect emphasized on measuring the impacts of informal CL approach, compared to the traditional lecturing approach. Also, the qualitative aspect of this study illustrates the personal experiences of four academic staff from four departments who offered courses via CL approach, and 24 students who took these courses. This paper assessed the effects of students’ participation in informal CL lessons as measured by teaching effectiveness, task orientation, and students learning satisfaction.

The mean comparison tests revealed that participation in the intervention group had a statistical mean difference in scores with moderate effect sizes (Cohen’s  $d = .38$  to  $.42$ ). One interesting finding in this study is that the three criterion measures had a high positive correlation with one another (Figure 5). Another

important finding (from Table 3) is that participation in the intervention group was significant in explaining teaching effectiveness ( $R^2 = .05$ ), task orientation (.04), and student satisfaction ( $R^2 = .04$ ). In addition, the 2 factors together explain about 28-36% of the variance in student satisfaction ( $R^2 = .28 - .36$ ). Thus, significant differences in results were found across the intervention period, for students in the four courses. Compared to students attending the traditional lecturing, students attending the informal CL instruction achieved higher levels of teaching effectiveness, task orientation, and learning satisfaction. However, there were differences in which measured dimensions showed improvement in each course. These results suggest that if universities are to improve teaching effectiveness, task orientation, and satisfaction with learning, they should focus on the informal CL pedagogic intervention and should consider disciplinary differences as these were found significant in predicting these criterion outcomes.

Cooperative learning is one of the major topics of higher education research as improving quality has become crucial for the twenty-first century learning (Johnson, et al., 2007). In making cooperative learning more effective and responsive, it is important to evaluate its contributions in multiple ways (Caropreso & Haggerty, 2000; Gillies & Haynes, 2011). It is possible to assess the effectiveness of CL: either directly through measuring performance in comprehensive exams, projects, and presentations, and/or through other indirect measures such as personal development and social outcomes and satisfaction with the learning (Sharan, 2010a). This study focuses on the second approach (indirect performance measures) or assessing the effects of the informal CL intervention on the teaching effectiveness, students task orientation, and satisfaction.

Numerous researchers have investigated issues related to CL in higher education setting (Johnson & Johnson, 2002a), and most of them agree that participation in the CL improves teachers classroom facilitation roles. Also, students experiencing cooperative learning are more likely to engage in learning and support one another, at the same time, remain highly satisfied with the instruction (Bullard & Bullock, 2004). Cooperative learning pedagogies are relevant because many studies have demonstrated that using them result in more positive outcomes than other classroom arrangements (Pham Thi Hong, Gillies, & Renshaw, 2009). Thus, through cooperative learning activities students are likely to exert more effort in their academic studies by taking actions such as regularly attending their classes and

becoming more involved in their coursework, and enjoying the academic and collegial environment (Tsay & Brady, 2010).

Several researchers have identified and empirically tested factors affecting teaching effectiveness and students' participation in cooperative learning. For instance, Wen (2010) identified factors affecting student active involvement, cooperation and relationship, and Sharan (2010) identified the effects of CL on academic and social outcomes. In this study, teaching effectiveness, students task orientation, and learning satisfaction are examined as dependent variables being affected by a pedagogic factor, 'participation in CL and the students' major area. As the findings of this study show, these two factors have significant positive relations with the criterion measures teaching effectiveness, task orientation, and students' satisfaction. These findings are consistent with the results reported in earlier research, particularly with the CL intervention.

Teachers' play the key roles while offering different courses for their students (Umbach & Wawrzynski, 2005). It could be argued that the more students had experience with effective quality teaching, the more likely they will engage in the learning activities and feel satisfied with the instruction (Gillies, 2009). Students' perceptions of the quality of instruction were positively related to both effectiveness and student satisfaction (Zerihun, et al., 2012). Research shows that both the content of an academic major and the sociocultural context in which it is taught influence not only what the student learns, but also their satisfaction (Butler, Zapke, & Leach, 2009). Many studies have concluded that subject area major has a significant influence on student's academic culture and their learning strategies and satisfaction (Pascarella & Terenzini, 2005). The regression analysis result demonstrates the importance of the two factors, group participation and department in predicting teaching effectiveness, students' task orientation, and learning satisfaction.

### **7.5. Conclusions and Implications of the Findings**

This study concludes that, although there are many factors that affect teaching effectiveness, task orientation, and students' satisfaction, the proposed informal CL pedagogic approach was found to be important and was positively correlated with these criterion measures. This analysis may provide universities with information on what areas to focus for quality evaluation and improvement purposes in order to

realize enhancement in teaching effectiveness, students learning experience, and satisfaction. Senior managers and academic members, and students will want (and need) to see evidence of outcome competencies and student satisfaction levels. Hence, given the need to determine instructional effectiveness, relevant learning experience and students learning satisfaction, universities must continue conducting, analysing, evidencing, and utilizing data on instructional processes and the resulted outcomes.

This study expands previous research in the factors affecting teaching effectiveness, task orientation and satisfaction by focusing on informal CL. It adds to literature on identifying and analysing the effects of CL intervention, like most prior research studies, we empirically tested the effect of informal CL intervention on three criterion outcomes to provide evidence on the results in the Ethiopian higher education setting. Hence, our study has important theoretical and practical implications. This study concludes from the findings that informal CL is necessary, but not sufficient. Identifying the factors and the extent to which they affect essential pedagogic factors and identifying their effects on multiple outcomes is critical for future research in Ethiopian universities.

Although the CL intervention improved the three measured criterion outcomes relatively better than the conventional teaching, its effect is still small. This suggests that while informal CL plays a particularly important role in improving student learning experience and satisfaction, it should not be perceived as the only factor affecting these, and its major weakness in addressing student's direct performance as in tests or exams needs to be recognized (Gonyea & Miller, 2011). While this study is an important step in understanding the extent to which the proposed pedagogic innovation is correlated with effective pedagogic practices and affect student satisfaction levels, it also leaves some questions open for future research. This study was conducted in four classes of a single major course each in a university. Hence, in order to generalize and validate the findings of this study, we suggest that a similar study be conducted in across the other colleges within the same university and in other universities of the country. That is, additional research is needed to examine the robustness of the findings and generalizations.

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## Appendices

### Appendix B

#### Student Questionnaire (Intervention I)

##### A. Teaching effectiveness scale

Based on your experience in this course, please rate the quality of teaching on the following points. Scale: 1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree

Item	Responses			
1) The teacher of this course motivated me to do my best	1	2	3	4
2) The teacher made an effort to understand difficulties I might be having	1	2	3	4
3) The teacher gave me helpful feedback on how I was doing	1	2	3	4
4) The teacher is good at explaining things	1	2	3	4
5) The teacher is interested to help students	1	2	3	4
6) The teacher often prepares varied and useful learning experiences	1	2	3	4
7) The teacher usually moves around the classroom to talk with students	1	2	3	4

##### B. Task orientation scale

Based on your learning experience of this course, please rate the quality of task orientation on the following points. Scale: 1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree

Item	Responses			
1) The learning activities in this class are carefully planned	1	2	3	4
2) This class usually starts on time	1	2	3	4
3) We are regularly informed about the learning objectives of each lesson	1	2	3	4
3) Students know exactly what has to be done in our class	1	2	3	4
4) Getting a certain amount of work done is important in this class	1	2	3	4
5) In our class, we often get clear activities and exercises so everyone knows what to do	1	2	3	4
6) In our class, the students often get focused to the point instead of being distracted	1	2	3	4

##### C. Satisfaction scale

How would you evaluate the level of satisfaction you and your class students benefited from the learning experience of this course?

Scale: 1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree

Item	Responses			
1) Every student of our class enjoys going to this class	1	2	3	4
2) Students are satisfied with acquiring relevant knowledge and skills by attending this class	1	2	3	4
3) Our class students are interested with what is usually done in this class	1	2	3	4
4) After this class, our class students have a sense of satisfaction	1	2	3	4
5) Overall, our class students are satisfied with the quality of this course	1	2	3	4



Table B1: Squared semi-partial Correlations for Scores on Five Predictors as a Function of Teaching Effectiveness, Task Orientation, and Learning Satisfaction (N = 340)

	Teaching	Task	Learning satisfaction
Variables	effectiveness	orientation	
College	.12***	.07***	.06***
Department	.20***	.18***	.15***
Group	.04**	.03**	.03**
Age			
Gender			
<p>Note: The squared partial correlation between criterion variable (y) and participation group (x1) represents the proportion of variance in y not associated with any other x's that is explained by x1.</p> <p>Significant levels. *<math>p &lt; .05</math>, **<math>p &lt; .01</math>, ***<math>p &lt; .001</math></p>			

**Chapter Eight: Shifting Instructional Paradigm in Higher Education  
Classrooms in Ethiopia: What Happens When We Use Cooperative Learning  
Pedagogies More Seriously?**

Abstract

The purpose of this study was to examine the relative effectiveness of a formal cooperative learning (CL) approach compared to a traditional lecture in terms of impacting student engagement and learning. Also, the study explored the factors and conditions surrounding the implementation process. Four instructors from four disciplines, and their students ( $N = 340$ ) volunteered to participate in this project. While one section from each discipline was taught using the lecture-driven method; the other section was taught via a formal CL approach. After the intervention period the researcher assessed the students in each section with a survey questionnaire that was prepared and piloted with earlier research. The quantitative findings indicated that significant differences in results were found across the intervention period, for students in the four courses. Compared to students attending the traditional lecture, students attending formal CL instruction achieved higher scores of academic challenge, cooperative interaction, and learning gains, with effect sizes ranging from 0.21 to 0.32, indicating modest to moderate effects. A further evaluation of causal relation showed that group participation is a significant predictor of academic challenge and cooperative interaction,  $\beta \geq .12$ ,  $p < .01$ . For the intervention teachers, formal CL pedagogies were appealing and useful to transform their instructional practices. Similarly, almost all the interviewed students saw their experiences with the formal CL activities as highly engaging and relevant. Overall, findings indicated how shifting the focus of instruction from a traditional lecture to a formal CL form greatly improves the students' engagement experiences and learning.

*Keywords:* Ethiopian, formal cooperative learning, higher education,  
instructional paradigm

## **8.1. Introduction**

For the students, the undergraduate degree is not only a means of developing subject-specific knowledge but also more importantly it helps to develop the humane attributes of analysis, critical thinking, synthesis, and problem solving as well as cooperation, communication and team-working (Kuh, 2008). Research shows that these core skills and dispositions are generic and transferable and are most likely to be preferred by employers when selecting employees (Yorke, 2004).

When higher education institutions proactively incorporate the above skills and dispositions into their undergraduate programs, graduates have been found to be better prepared to compete for the best job opportunities in the twenty-first century's work environment (Bryson & Hand, 2007). Paradoxically, studies have shown that these essential skills and dispositions are poorly developed in many college and university students (Hu, et al., 2008; Johnson, et al., 2007). It is also argued that the lecture is still the dominate pedagogy and classroom practices involve increased reliance on the lecture method (Kezar & Kinzie, 2006). Regardless of this, the effects of lecturing on students engagement is minimal, particularly in terms of supporting students in inquiry, discussion, and/or expository learning” (Hennessey & Evans, 2006).

### **8.1.1. Rationale**

Improving the quality of teaching and learning is at the forefront as the question of student access to higher education is becoming one of the major challenges facing higher education (Haggis, 2006). Despite a myriad of literature on quality in higher education, how to manage the quality development process is not readily available (Johnson, et al., 2007). While academic developers and subject area teachers have mutual responsibilities towards finding ways to improve, there is a scarcity of literature available for either academic staff or educational developers on the initiation of this development process, particularly in the Ethiopian higher education context.

Given the potential of cooperative learning, to promote learning and personal and social development outcomes at higher educational institutions, there has been a growing interest in examining the effects of CL on several outcome measures (Pescarmona, 2011). This study intends to contribute to existing literature by determining the extent to which two factors including department and group

participation in formal cooperative learning lessons affect students' engagement in academic challenge, interactivity and cooperation, and their perceived gains. Despite the many studies on undergraduate students, there is a lack of research on instructional approaches and learning conditions that facilitate or deter learning.

### **8.1.2. Objectives**

The purpose of this study is to examine the relative effectiveness of formal CL pedagogies compared to the traditional lecture in improving the quality as measured by the scores in students' academic challenge, cooperative interaction, and learning gain. Also, the study intended to explore the contextual factors and conditions surrounding the CL implementation process.

## **8.2. Methods**

### **8.2.1. Research Design**

This study used a case study method (Stake, 1983) emphasizing directly to CL pedagogical practices in classrooms. Both quantitative and qualitative data (Guba & Lincoln, 1983; Scriven, 1983) were used to gain a holistic picture of the implementation process and the resulted outcomes. The quantitative aspect emphasized on measuring the impacts of formal CL approach, compared to the traditional lecturing approach. Also, the qualitative aspect of this study illustrates the personal experiences of four academic staff from four departments who offered courses via CL approach, and 24 students who took these courses. The qualitative investigations comprised of semi-structured interviews. The participant responses were classified around three themes. These themes were established in an earlier pilot study and reported in chapter 6, with slightest modification to fit with the contents and the contexts of the present study.

### **8.2.2. Description of the formal CL intervention**

Formal CL methods differ from other forms of CL methods in that the small group members in the formal CL activities work together for 2-3 class periods to complete group learning tasks or assignments. This study included two types of formal CL methods: jigsaw and group investigation. In addition, an inter-group peer assessment and marking exercise with rubrics was included. This final exercise is a continuation of the jigsaw lesson so group activities depend much on higher-order intellectual activities.

The formal CL approach consists of the following main features: 1) heterogeneous small groups based on gender and cumulative grade point average, with 4 members each; 2) a majority of the class time, more than 70%, devoted to small group activities; 3) a four-step instructional activity sequence that makes it possible to devote a large amount of class time on helping students develop the skills of learning how to learn, and the ability to use concepts as opposed to simply listening and note-taking; and 4) predominantly consisting non-graded individual performance and group performance; and 5) an inter-group peer assessment and marking with rubrics.

Members' assignment to each jigsaw was made based on the students' cumulative grade point average as per their previous semester result, gender and teachers' judgement. Once the jigsaw members have been assigned, they spent 2-3 periods on a similar jigsaw working with different academically challenging and more interactive learning activities. The activities included reading in groups, synthesizing materials, presenting or teaching other group members on selected topics, exploring materials, and discussing and sharing experiences. The final assignment was completed and marked in group, thus the spirit of cooperation via the *small* group persisted until the end of the formal cooperative learning intervention.

Table 13. Examples of formal cooperative learning lessons that incorporate jigsaw group activities across the four courses.

Example	Course	Discipline (Major)
<b>Biology: Applications of DNA recombinant technology in different domains such as:</b> a) Medicine b) Agriculture c) Forensics Science d) Archaeology	Molecular Biology <sup>1</sup>  (Biol. 338)	Biology
<b>Chemistry: Identifying, reasoning, and matching of different spectrometers with their appropriate readings and structure.</b> a) Alkanes b) Alkenes c) Benzene d) Alcohols	Instrumental Chemistry <sup>1</sup>  (Chem 322)	Chemistry
<b>English Language and Literature: The different figures of speech</b> a) Declarative b) Representative c) Expressive d) Commissive	Discourse and Pragmatics <sup>2</sup>  EnLa (424)	English Language and Literature
<b>Law: The responses of the Ethiopian constitution to Gender Based Violence (GBV) with specific reference to:</b> a) Harmful Traditional Practices b) Rape c) Child Trafficking d) Penalties attached with the above three GBVs	Gender and Law <sup>2</sup>  (Laws 462)	Law

The main advantages of these application-oriented group activities are that the activities ensure learning rigour and relevance, at the same time, providing students the opportunity to practice group processing skills, and above all, to demonstrate individual and group accountability. Further, the assessment rubric provides detail descriptions of the teacher's expectations of standards of work, the focused criteria for marking and scoring, and levels of grading. The rubric has a scale from 0 (lowest) through 4 (highest), using the criteria. The criteria for each course focus on the extent to which the *small* group demonstrates, and do not demonstrate expected standards of work across a range of performance levels.

The final assignment has both individual responsibility to manage part of the group assignment and a collective responsibility to create an organized assignment of the *small* group to be submitted in the end. The inter-group peer assessment and marking was prepared as a continuation of the previous lessons so that students spent time for a deeper analysis and application of learning materials for solving

problems. Through the inter-group peer assessment activities with a random assignment and flexible option, students were given the opportunity to exercise fairness and equity during the formal CL instructions. The students used the scoring rubrics in preparing assignments; also learn analysis of others' assignment work based on the rubric, and learning how to prepare clear and constructive feedback that promotes the notion of assessment for learning.

### 8.2.3. Participants

Instructors for four undergraduate courses in four different disciplines participated in this formal CL study. The courses included: 1) Biology: Molecular Biology; 2) Chemistry: Instrumental Chemistry, 3) English Language and Literature: Discourse and Pragmatics, and 2) Law School: Gender and Law. In these four courses, 190 students of 2<sup>nd</sup> year, Biology major and Chemistry major and 150 students of 3<sup>rd</sup> year, English Language and Literature major and Law major participated. While the total participants were 358, a total of 18 (4%) students excluded from the analyses due to excessive loss of the required data. Thus, the student sample included ( $N = 340$ ) students (160 intervention group and 180 comparison group). The same 4 instructors and 24 randomly selected students participated in the interviews. The student interviewees included 6 students from each discipline with a proportional representation of students by gender.

Table 14. *The distributions of participants by group, gender, department, and classification*

Class Year	Department			Gender		Total
				Female	Male	
2nd year	Biology	Participant	Intervention	13	32	45
		group	Comparison	13	33	46
		Total		26	26	65
	Chemistry	Participant	Intervention	6	41	47
		group	Comparison	4	46	50
		Total		9	10	87
3rd year	English	Participant	Intervention	1	31	32
		group	Comparison	4	29	33
		Total		5	5	60
	Law	Participant	Intervention	10	26	36
		group	Comparison	20	29	49
		Total		35	35	63
Grand total				<b>70</b>	<b>264</b>	<b>334</b>

#### 8.2.4. Data Sources

**Questionnaire.** A survey questionnaire comprising of items used to measure the academic challenge in a course, student's cooperative interaction, and their learning gains was assessed using a single scale anticipated measuring the quality of the student engagement and learning. The items used in this survey are part of a pilot study reported in chapter 6 of this doctoral dissertation. Through the different items participants were asked to think about their experience in the formal cooperative learning while reading statements and indicate how true the statements were for them. The last item in the questionnaire began with 'Overall, how would you rate your entire learning experiences of this course? and was scaled 1 (*poor*) to 5 (*excellent*). Appendix C presents the questionnaire.

**Semi-structured interview.** The teacher and student participants were interviewed separately using the first author's semi-structured interview protocol which was used as part of this doctoral study and reported in chapter 6. We conducted one-on-one interviews with teachers and students as one source of data collection. Interviews ranged between 20 to 30 minutes and focused on a series of questions that asks the participants for their views on the following themes: (1) general perception about their experience in the formal CL lessons; (2) aspects of formal CL they have seen as strength; (3) examples that reflect this strength; (4) the teacher's roles and the students' responses in the formal CL lessons; (5) some of the challenges they have faced; and (6) their general comments about the formal CL lessons in general.

#### 8.2.5. Specification of the Quantitative Model

This study model includes variables to explore the instructional conditions and the resulted outcome of formal CL intervention. These components were identified on the basis of student engagement theory (Coates, 2006; Kuh, 2009) and cooperative learning theory models (Gillies, 2007; Johnson & Johnson, 2009). Figure 1 presented the quantitative study model. The entire model consists of three sub-components: Academic challenge, interactivity and cooperation, and learning gains.

#### 8.2.6. Pre-analysis

**Correlation analysis.** One of the main purposes of this study was to assess the existing complex relationships among the measured constructs used to measure



student engagement and learning. For this, a correlation test was conducted across the different measures. The findings show that interrelationships among the measured three constructs are all positive and high correlations. Table 15 presents the reliabilities and correlation summary result of the survey measure at the item level.

Table 15. Descriptive Statistics, Reliabilities and Correlation Summary Results for the Academic Challenge, Interactivity and Cooperation, and Gain scales (N = 340)

Factors	Item	Obs	Mean	Mean %	SD	Min	Max	Inter-item Corr.	alpha
Academic challenge	acha1	339	3.4	85	0.72	1	4	0.35	0.80
	acha2	338	3.5	88	0.69	1	4	0.36	
	acha3	337	3.4	85	0.77	1	4	0.35	
	acha4	335	3.4	85	0.74	1	4	0.35	
	acha5	337	3.3	83	0.85	1	4	0.35	
Interactivity and cooperation	icop1	338	3.2	80	0.86	1	4	0.35	0.83
	icop2	334	3.4	85	0.79	1	4	0.35	
	icop3	335	3.2	80	0.90	1	4	0.36	
	icop4	338	3.1	78	0.88	1	4	0.36	
	icop5	334	2.8	70	0.99	1	4	0.35	
	icop6	338	3.1	78	0.95	1	4	0.35	
	icop7	337	3.6	90	0.65	1	4	0.36	
Gains	gain2	338	3.4	85	0.73	1	4	0.35	0.77
	gain3	336	3.5	88	0.68	1	4	0.35	
	gain4	335	3.4	85	0.69	1	4	0.36	
	gain5	337	3.4	85	0.75	1	4	0.36	
	gain6	336	3.4	85	0.75	1	4	0.36	
	Overall rating	orele	337	4.11	82	0.84	1	5	
							Test scale	0.35	0.90

As shown in Table 15, the average inter-item correlation is .35, and the alpha coefficient for the test scale based on all items is .90. Here these figures imply that all the items used in the scale seem to fit well in all respects. The item-test correlations and the item-rest correlations are strong for all items. In sum, each item used in this scale correlates strongly with each other. To see the extent to which the different measured constructs correlated to each other at the structural level and understand the adequacy of this scale as a model, a further model development was made using Structural Equation Modeling (*SEM*) analysis. Figure 7 presents the model components and the model adequacy test results will be presented.

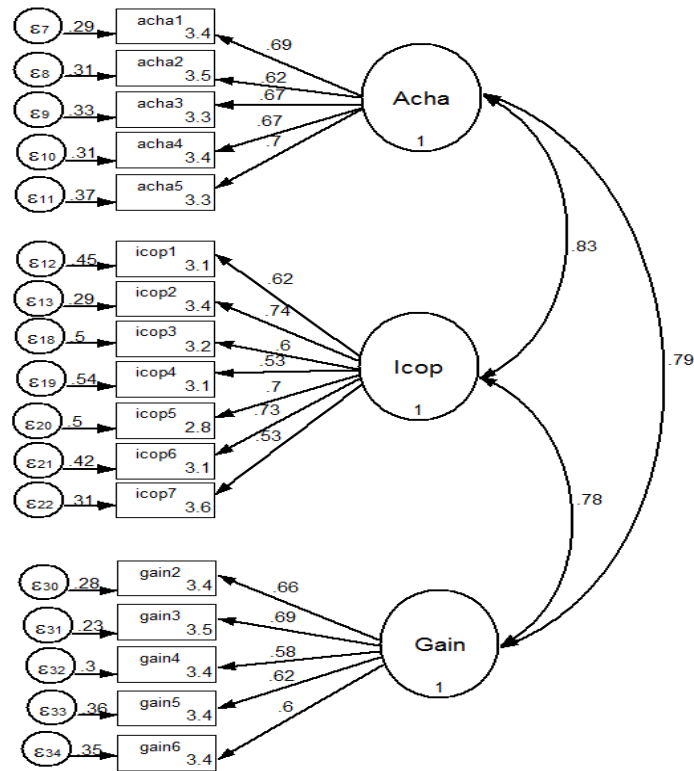


Figure 7. Factor structures of the academic challenge, interactivity and cooperation, and gain scales.

Rectangles represent endogenous/observed variables. Ovals represent latent variables.  $\epsilon_1$ ,  $\epsilon_2$ , and  $\epsilon_3$  denote residual terms representing unmeasured influences on endogenous variables. The figure was drawn with Structural Equation Modeling (sem). All the correlations are significant at 0.05 levels.

As shown in Figure 7, the three sub-components have high correlations with one another,  $r$  ranging between .78 - .83. The factor loading of each variable in the model is moderate to high loadings (.53 - .74). A further model adequacy test was conducted for the scales using model goodness of fit statistics and practical indexes. As chi square statistics usually favours large sample size in testing model fitness, we used other additional practical indices to find adequate evidence of model fitness. We gauged model fit through the comparative fit index (CFI; Bentler, 1990), Tucker-Lewis index, the root mean squared error of approximation (RMSEA; Brown & Cudeck, 1993), Standardized Mean Square Residual (SRMR), Coefficient of Determination (CD) as well as chi-square divided by the degrees of freedom ( $\chi^2/df$ ). CFI and TLI values > .90s, RMSEA and SRMR values less than .08, and  $\chi^2/df$  values

less than 3.0 are all considered indications of good model fit (Schreiber, Nora, Stage, Barlow, & King, 2006; Yu, 2002).

In accordance with the three dimensional nature of the construct, we estimated a three-factor model, with the teaching effectiveness, task orientation, and satisfaction items loading onto their respective latent variables, which were allowed to inter-correlate. The model displaying the best empirical fit consisted of three factors. The fit indices for the hypothesized model were as follows:  $\chi^2$  (df, N = 340) of 173.205 ( $p < .001$ ), TLI (.96), CFI (.97), CD (.98), RMSEA (.040), and SRMR (.037). The Chi square is significant ( $p < .001$ ) which is an indicator of poor fit. However, this is frequently the case because of its sensitivity to large sample. The remaining fit indices are excellent. These results showed that the hypothesized model is a very good fit to the data.

### **Data Analysis**

Across the four courses, *t* test and multiple regression analysis were applied. The *t* test used to determine if the formal CL approach compared to the traditional lecture is effective overall across the measured three constructs. For this, the study compared the average scores of students in the intervention group with the average scores of students in the comparison group, for each measured construct (academic challenge, cooperative interaction, and self-reported gain). The regression analysis used to determine the predictive validity of group participation in inflecting the predictions of the measured constructs after accounting for the effects of the controlling variables.

## **8.3. Results**

### **8.3.1. Summary results of *t* tests**

The main intent with the quantitative investigation of this study is twofold. The first is to examine the interrelationships of the 3 variables used to measure the effects of formal CL as measured by academic challenge, interactivity and cooperation, and educational gains. The second is to measure the predictive validity of the participation in the CL intervention after accounting for controlling variables. For this, the study used both correlation analysis and multivariate regression analysis. Below, the results of these analyses will be presented.

An independent samples *t* test was run to determine whether there are statistically significant differences observed between students in the intervention group and comparison group with respect to their ratings in perceived academic challenge, interactivity and cooperation, and gains. The tests suggest that there is a statistically significant difference in students' ratings between the two groups, with students in the intervention group reporting higher scores on these measured variables compared to those from the comparison group. The effect sizes of the differences, as measured by Cohen's *d*, is .21 to .32, which suggest modest to moderate effect sizes of the differences between these groups (Table 16).

Table 16. Differences in students ratings of Academic Challenge, Cooperative interaction, Gains, and Overall experience between intervention group and comparison group (*N* = 340)

Factor	Intervention Group	Comparison Group	95% CI		<i>df</i>	<i>t</i>	Cohen's <i>d</i>
	M (SD)	M (SD)	LL	UL			
Academic Challenge	.08 (.34)	-.06 (.48)	(.05, .24)		337.97	2.88**	.31
Cooperative interaction	.08 (.49)	-.07 (.50)	(.05, .26)		335.01	2.84**	.31
Gains	.04 (.42)	-.05 (.43)	(.00, .18)		335.27	1.98*	.21
<sup>1</sup> Overall rating	4.25 (.77)	3.99 (.88)	(.08, .45)		314.85	2.86**	.32

Note. *CI* = Confidence Interval; *LL* = Lower Limit; *UL* = Upper Limit; *df* = degrees of freedom; Cohen's *d* = Effect size; <sup>1</sup>Participants average ratings of the entire learning experiences with the course.

The means and standard deviations were computed using the regression method and saved as standardized scores with a mean of zero and a standard deviation of one.

Effect size  $\delta$  is defined as the ratio of the difference between the mean values of intervention group and comparison group over the pooled standard deviation,  $\delta = (\mu_1 - \mu_0) / \sigma$ .

Significance levels. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

As shown in Table 16, results indicated significant differences in the average scores between the intervention group and the comparison group across the three measured areas. In terms of academic challenge, there is higher scores by the intervention group ( $M = .08$ ,  $SD = .43$ ) than the comparison group ( $M = -.06$ ,  $SD = .48$ ),  $t(337.97) = 2.88$ ,  $p = .004$ . Similarly, with regard to cooperative interaction, there is higher scores of the intervention group ( $M = .08$ ,  $SD = .49$ ) than the comparison group ( $M = -.07$ ,  $SD = .50$ ),  $t(335.01) = 2.84$ ,  $p = .005$ . Also, regarding learning gains, there is higher scores of the intervention group ( $M = .04$ ,  $SD = .42$ ) than the comparison group ( $M = -.05$ ,  $SD = .43$ ),  $t(335.27) = 1.98$ ,  $p = .049$ . Moreover, concerning the average ratings of the entire learning experiences, there is higher scores of the intervention group ( $M = 4.25$ ,  $SD = 0.77$ ) than the comparison

group. ( $M = 3.99$ ,  $SD = 0.88$ ),  $t(314.85) = 2.86$ ,  $p = .005$ . Overall, there are higher scores of the students in the intervention group than in the comparison group.

### 8.3.2. Multiple Regression Analysis Result

**Predictors.** In this study, predictors were selected based on the squared semi-partial correlations as criteria for model selection. Thus, only those predictors that are found significantly related with the criterion variables were included in the regression model (Table C1). Based on the results, three independent variables including group, college, and department were used as predictors of the criterion outcome measures. Group refers to whether or not the participant is either in the intervention group or comparison group and it was coded with zero when the participant is in the comparison group and one when the participant is in the intervention group. Similarly, college refers to the category of college. Also, the department refers to the type of discipline area the student participant attending.

**Criterion measures.** A scale consisting of three clusters of variables used to measure pedagogical factors and learning gains were used, and this scale was part of the pilot intervention and has produced a reliability score of alpha ( $\alpha$ ) = .70. This scale was described previously in the pilot study, which is reported in chapter 6 of this doctoral dissertation. A total of five items were used to measure academic challenge, seven items used to measure interactivity and cooperation, and another six items used to measure student satisfaction. The three hypotheses for this study include:

1. Participation in the formal CL intervention results in a higher involvement in academically challenging activities.
2. Participation in the formal CL intervention results in a higher increase in students' interactivity and cooperation.
3. Participation in the formal CL intervention results in a higher gains in learning and affective development.

**Regression models.** The participation group was dummy coded with the intervention group coded as 1 and comparison group coded as 0. A two-step multiple regression analysis was used to analyse the predictions of academic challenge, interactivity and cooperation, and gains from student participation to measure the effects of participations when accounting for controlling variables including college

attended, major field, age, and gender. The three multiple regression models were designed using the applications of *SEM*. Here the main purpose is to frame overall process-outcome measures and to analyse, which of the predictive variables have the strongest influence on the proposed pedagogic factors and expected outcome. Figure 8 presents the pictorial representation of the regression models.

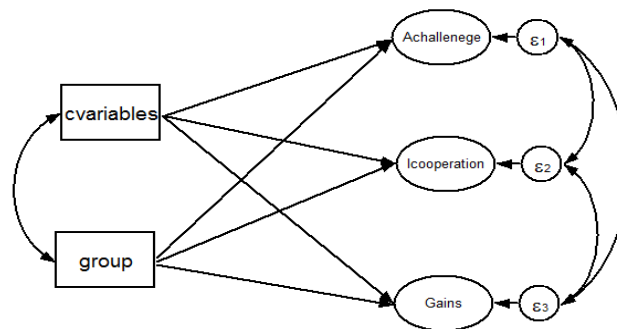


Figure 8. The regression models for the two predictors of formal CL intervention effects.

As shown in Figure 8, there are 3 regression models in the multiple regression analysis. The first model describes the predictions of academic challenge from the independent variables including controlling variables and group participation. The second model describes the predictions of interactivity and cooperation from the independent variables including controlling variables and group participation. The third regression line describes the predictions of educational gains from the independent variables including controlling variables and group participation.

One basic question, corresponding to the concept of construct validation guided the analysis for this part: Is participation in the formal CL intervention significantly related to scores of academic challenge, interactivity and cooperation, and gains, after accounting for controlling variables? The analyses were found statistically significant across the three predictions (Model1.  $F[3, 336] = 56.46, p < .001$ , Model2.  $F[3, 336] = 60.32, p < .001$ , and Model3.  $F[3, 336] = 38.12, p < .001$ ), indicating that participation group, department, and college attended are good predictors of academic challenge, cooperative interaction, and learning gain. The overall model predicted 33% of the variance in academic challenge, 34% of the variance in cooperative interaction, and 25% of the variance in learning gain.

Table 17. A Two-Step Multiple Regression Analysis Predicting Academic Challenge, Interactivity and Cooperation, and Gains (N = 340)

Predictor	Model1 Academic challenge		Model2 Interactivity and Cooperation		Model3 Learning Gain	
	Adjusted R <sup>2</sup>	$\beta$	Adjusted R <sup>2</sup>	$\beta$	Adjusted R <sup>2</sup>	$\beta$
Step 1						
Control Variable <sup>1</sup>	.32***		.33***		.24***	
Step 2						
Participation Group <sup>2</sup>	.01***	.13**	.01***	.12*	.01	.08
Total Adjusted R <sup>2</sup>	.33***		.34***		.25***	

Note. <sup>1</sup>Control variables included college and department or major filed.

<sup>2</sup>The reference group is intervention.

Significance levels. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

It is clear from Table 17, that the changes in  $R^2$  across the three predictions after accounting for controlling variables were 1% of the variability, as indexed by the adjusted  $R^2$  statistics. Also, Table 17 revealed that, the variable “participation group” significantly predicted academic challenge,  $\beta = .13$ ,  $p = .005$ , as well as, cooperative interaction,  $\beta = .12$ ,  $p = .005$ , accounting for 1% of the variance for each prediction. In addition, the same predictor “participation group” marginally significantly predicted learning gains,  $\beta = .08$ ,  $p = .085$ , accounting for 1% of the variance.

### 8.3.3. Results of Interview with Teacher and Student Participants

**Conceptual framework for analysis of interview transcripts.** The students’ and teachers’ qualitative interviews were organized based on a similar conceptual framework reported in chapter 6 of this doctoral dissertation. The themes comprise: 1) general perceptions, values, and attitudes on formal CL pedagogies, 2) participants’ lived transformative experiences as a result of participation in the formal CL classroom practices; and 3) difficulties faced during implementation and ways to alleviate them. These conceptualizations provide theoretical outlines of the qualitative interview data and guide analyses in subsequent sections. In this analysis, the interview participants have been divided into two groups: 1) The teacher group (T) represents teachers’ participants in the pilot intervention; and 2) Student group (S) represents the students who participated in the interviews.

#### 8.3.3.1. Teacher participants’ interview results.

##### ***Teachers perceived opinions and values about formal CL lessons.***

Teacher participants typically agreed on the overall positive contributions of formal CL pedagogies to the teacher and the student. They felt that, in terms of preparation,

formal CL helps the teacher to paying attention not only for the course objectives and contents but also for the learning experiences that would actively engage all students. Also, it helps the teacher to learn the pedagogical skills that are relevant to negotiate ideas forwarded by students and discussing with them on various points. One participant teacher (T2) commented how formal CL assisted them as teachers:

In general, formal CL pedagogy helped us to see deep inside ourselves professionally as teachers, which provides us the chance to critically assess what we are supposed to do, checking how much we have accomplished, and identifying our gaps as higher education teachers.

One teacher participant (T1) labelled that instructional environment supportive because it had the most positive impact on the teacher performance and the opportunity for creating a quality learning environment. In support of this, the other teacher participant (T4) explained: "The openness and freedom of the classroom under formal CL condition seemed to promote student cooperation, peer-support, and proactive attitude."

***Teachers lived transformative experiences with formal CL lessons.*** Each interviewee also described how the formal CL pedagogies had considerable effects on the teaching performance, instructional environment and student outcomes, though in different ways. Teacher participants put in extra efforts in preparing and implementing CL activities; even their desire to help students is stimulated by the instructional environment that characterizes formal CL. One teacher participant (T2) noted:

Formal CL pedagogies created opportunity for students and teacher to be closer and have more positive relationships. The activities helped students to see their capacities and feel what they are able to do. Compared to the lecture method, this approach enables students to interact more among each other's and with the teacher. So the students were very active in the CL classes compared to the lecture method. As I have seen, the students' self-confidence increased with the CL approach than the other approach (lecture method). It has increased students communication skills since they were actively engaged in different learning activities. Also it has increased students' analytical ability which is, I believe, relevant for science students.

Also, intervention teachers believed that most of the students were actively participating in the formal CL lesson; they were with better energy to learn, do the



learning tasks to the best they can, and had more willingness to do their level best to share their experiences and work towards their group success. One teacher (T3) described the classroom conditions as follows:

In some occasions where group members were confused with certain ideas, you may hear one of the students describing things or explaining ideas for others, which is an indication of their involvement in learning and their positive relationships. I have never seen a passive student in the CL lessons and the very contributions of my students was found high, particularly in the formal CL lessons since they were taking the most part in the implementation process.

A teacher participant (T1) commented:

It was fascinating for me to see my students critically analysing a very challenging case by helping one another. I supposed that students would fail to manage that but they used to tackle the task through their group effort and helping one another. I can say students were able to uncover things, which seemed probably impossible, if it was lecture. So through group effort and sharing of experiences they have got the opportunity to acquire detailed knowledge.

The other teacher (T4) noted the productivity of inter-group peer assessment:

If you look the reports the students in my intervention class produced, you can understand how well they have been working together as the quality of the report writing was far better compared with previous reports they prepared for another assignment of the same course.

The inter-group peer reports and critical case analyses demonstrated the students' ability to produce something by their own and their concern and additional care for learning through assessment. The participant teachers believed that formal CL pedagogy is impacting students' engagement and learning.

***Difficulties encountered in implementation and ways to alleviate them.***

The main challenges for the intervention teachers from the teaching perspective included pedagogical skills, unfamiliarity, and time constraints. Sometimes, intervention teachers spent relatively little time giving feedback, probing students' understandings, or asking students to articulate their understandings during the CL lessons. Sometimes a teacher also delivered just-in-time lectures and spent very little time observing students activities or pointing them to appropriate resources.

Also, intervention teachers found some students who came to CL class without completing the required reading, and still some without the required learning

resources. As a result of these and other reasons, the classroom practices occasionally demonstrated implementation failures exhibiting confusions on what to do. Sometimes, *small* group works were dominated by few clever or more vocal students. One teacher (T1) commented: “In my class, some students, particularly the clever ones took the entire small group discussion to a different focus. While, male students more actively involved in the discussion, female students were found less active.” Also, a teacher participant (T3) saw few instances of students’ temporary disagreement while working in *small* groups and appeal dealing with inter-group peer assessment and marking.

Intervention teachers showed their concerns to alleviate these problems by constantly diagnosing students’ difficulties, interrupting students during their inquiry in order to probe their understandings, challenging their thinking, clarifying concepts, and promoting critical discourse. Occasionally, the teacher intervened by challenging the whole class with a question. However, the teacher participants’ capacity to perform was highly constrained by different local factors pertinent in the studied context, as they were forced to contextual diversities without the corresponding capabilities to handle and the required instructional resources needed to create a quality learning environment.

#### **8.3.3.2. Student participants’ interview results.**

##### ***Students perceived opinions and values about formal CL lessons.***

Interviewed students like S2, S12, and S17, saw the value of those CL activities very positively. The first student (S2) commented that: “We have greater opportunities to interact and support with each other in the formal CL groups.” The other participants (S12 & s17) described that interaction in the formal CL exceeded levels of classroom interaction they have ever experienced before. Seen from a different perspective, a student interviewee (S23) noted: “I was surprized that we were able to teach one another without the support of the teacher.” Another student (S16) came to realize that he had greater interest to attend classes with the formal CL groups compared to lecture classes. The other participant (S18) used to talk with senior students and have come to realize the betterment of formal CL learning conditions and how that supported him and his classmates to have gained better knowledge.

Moreover, student participants (S10 & S22) clearly saw that CL group members brought different perspectives on the same thing that helped them to see concepts more broadly and develop wider understanding. Most student interviewees

described feeling confident as they work in the formal CL groups. One student (S1) said: “Formal CL helped us to be more confident since we did the main learning tasks in class with little support from the teacher.”

Most shared a student participant (S7) comment that “...group assignment projects and inter-group peer assessment exercises are valuable educational experiences.” A student participant (S20) came to learn a lot in the formal CL group settings and attached high value to the alignment she saw: “I was impressed by the strong relationship of experiences in the jigsaw groups with the contents of group assignments and to the students inter-group peer assessment.” Indeed, such an academic culture contributes to trust and relationship building and social skills development, along the way, learning course contents.

***Students lived transformative experiences with formal CL lessons.*** Many group experiences were found critical by the student interviewees that could help to foster engagement and learning. For example, student participants encourage each other’s to participate. Also, they learn to work together regardless of whether they are male or female, high achieving or low achieving. A student (S1) observed: “I’ve just been really exposed to a broad range of viewpoints and that helped me to be a better person in interacting in class.” Most students described how they learned more productively in the formal CL groups compared to the usual lecture. A student interviewee (S23) shared that:

In my view the entire CL lessons were important for the teacher and the students. Teacher has the responsibility to cover the contents and students also have the right to learn and gain the necessary knowledge and skills, and the formal CL groups were critical to fulfil these joint rights and responsibilities. Also, through the CL lessons, students can learn freely without feeling pressure because most of the classroom interactions are between one another.

Seen from a different perspective, one student (S8) commented:

For instance, some students have fear of talking in front of others that may be accountable to their background in the previous school levels. However, the experience we had with the CL lessons provided them opportunities to express their ideas freely.

The student participants also reveal the widespread sense that, for the most part, formal CL activities are occurred in a teamwork setting, leading to feelings of connection and meaningful learning together. For this, one student (S2) said,

“Talking and working together is a key to work in the formal CL groups.” Some students were even willing to switch groups’ part way through the lesson and gave the necessary cross-group assistance.

Student participants acknowledged the contributions of their teachers to the effective implementation of formal CL lessons. In the views of the majority of student interviewees, teachers in the CL lessons were more prepared for class, and were most interested in providing an atmosphere in which students might pursue doing required learning tasks while using the CL experience as a support for their work. For example, one student (S22) commented:

Toward the end of a formal CL lesson, one student actually raised a question that triggers more discussion. Most of the students were interested with that and actively participated. Our teacher facilitated this discussion and took the opportunity to clarify concepts, give live examples, and facilitates the development of a more critical idea.

The phrases that most student participants of the interview in the four departments used to describe the teacher’s roles in the formal CL lesson include: “Preparing learning activities,” “organizing students to small-groups,” “managing students learning experiences.” Also they used other phrases like: “providing guidelines,” “providing summary,” and “asking critical questions.”

While they do share many of the benefits of formal CL, high-achieving students slightly differ from low-achieving students, in the way they describe the essential elements of formal CL groups. High-achieving students give worth to the unprecedented learning autonomy offered to independently pursue classroom tasks, taking responsibility for learning, freely raise critical questions, and opportunities offered to support others.

High-achieving student interviewees usually have more active-participation in the formal CL groups; and they came to realize the importance of empathy and their commitment to involving others who may be shy or low achieving groups. A student (S19) described that: “It was an interesting experience. I loved it, and I think it gives pleasure to do my learning in that course, assisting others to achieve common goals.” One student (S2) reflected, “All my work with the formal CL activities has helped me to learn how to work with others respecting individual differences.” Most high achieving student participants share a student participant (S21) comment: “I think my participation in the formal CL groups does make me more sensitive towards

those low-achieving and/or shy students and the kinds of support they need in a group learning situation.”

Unlike the high-achievers, low-achieving student participants usually have less-active participation in the formal CL groups. Also, they emphasize the importance of inclusiveness, ease of collegial atmosphere and peer support. Student participants such as: S10, S16, & S22, highlighted that previously with the lecture classes they were afraid to express ideas in front of others, however, with the formal CL lessons, they participated in interacting and sharing their ideas with others. Another student (S23), observed: “It was exciting to see every member trying to contribute something to the group success.” Moreover, a student participant (S17) described that: “...with the peer-group assessment exercises we all participated” With the acceptance of interdependence through the above stated group learning experiences, developing trust in others and building positive relationship became essential.

***Difficulties encountered in implementation and ways to alleviate them.*** In the views of student participants, lack of prior knowledge, unpreparedness, inability to follow instructions, and unequal participation were the major challenges. Also, there are reasons by which the activities of formal CL were perceived as less impacting on some students. A student participant (S2) revealed two reasons: “fear of being watched by others while talking and lack of confidence in spoken language. In addition, time is the other factor identified by the student participants. Also, a student participant (S7) noted that in the formal CL, “There was disagreement on ideas and concepts, particularly there were different perspectives on the same thing and group members sometimes did not reach consensus.” Thus, most of the time, they ask for the teacher’s conformity. Most of the student participants believe that less participation or ineffective implementation was the result of several factors, including misunderstandings of the required learning tasks and difference in capacity among the small-group members.

#### **8.4. Discussion**

This study examines the fundamental issues of quality improvement through case studies of four teachers implementing a formal CL pedagogic intervention across four courses in four disciplines within the actual classroom settings. Specifically, this study examined (a) the ways the CL pedagogy was contextualized within the existing

classroom cultures; and (b) the interplay between the CL pedagogy, and the cultural context that surrounded classroom practice. The prime focus was to investigate the enactment of this CL pedagogy as it was used across four courses of four disciplines.

Formal CL is one of the variants of cooperative learning pedagogies, in which small group members engage in structured activities designed for more than a single period. This approach provides more opportunity for the students to interact and cooperate (Smith, 2000). This study intends to assess the effects of students' participation in the formal CL and their college, and department type as predictors of academic challenge, interactivity and cooperation, and students self-reported gains. One interesting finding in this study is that the three criterion measures had a high positive correlation with one another (Figure 1). The mean comparison tests provide that participation in the intervention group had a significant mean difference with non-participation. The mean differences as measured by Cohen's *d* are modest to moderate effect, ranging from .21 to .32. Another important finding (from Table 4) is that participation in the formal CL predicts students' attainment of increased academic challenge, interactivity and cooperation, when accounting for controlling variables. However, participation in the intervention group did not significantly predict students learning gains. Only marginally significant difference was found for learning gains between the classroom structure conditions. This suggests that if universities are to improve academic challenge, students' interactivity and cooperation, they should focus on the CL pedagogic intervention as it was found significant in predicting these criterion outcomes. It was also clear from the regression results that controlling variables together accounted for 25% to 34% of the variance in the measured three variables. Thus, the effects of college, major field, age and gender need to be considered as the present study found significant influence of these factors on students' attainment of academic challenge, interactivity and cooperation, and educational gains.

The heart of the CL approach to instruction is the four-step instructional activity sequence that is applied at least in the CL lessons. Probably the most unique feature of this sequence is that there are 1) no formal presentations by the instructor, except a brief introduction and further, clarifications of misunderstandings, when needed, 2) the students have done the main job studying handouts and lecture notes with minimal teacher's support, and 3) involved in high-ordered intellectual activities

and group processes to come up with learning product that demonstrated their mastery of learning the contents, and 4) share that with other small group members. The sharing ensures that students take complete responsibilities to manage the learning of the topics within the specified chapter.

For the scoring and grading of assignment to be fair and equitable, teachers should utilise criteria and standards. These make the assessment task more meaningful and far more transparent for the students. A well-designed and fair marking scheme will serve not only to minimize students' questions about their grade but also it acts as an informative tool for feedback. This study found supporting evidence that assessing students' assignment work will be more educational when the students themselves play an active role in evaluating their contributions.

### **8.5. Conclusions and Implications of the Findings**

Overall, the formal CL pedagogy appears to be a sound approach for higher education teachers interested to promote significant learning experiences for their students. Although emphasis was placed on three areas measured in this study, the results showed differential outcomes across the measured areas. Given the current educational trend towards accountability and high standards, CL pedagogies offer higher education teachers possible alternatives to classroom instruction that expands student learning well beyond content area knowledge. Findings suggest that integrating CL pedagogies to the existing classroom instruction resulted in effective educational, assessment, and feedback practices and student outcomes. Hence, this study has important theoretical and practical implications.

Although the evidence supports a significant positive prediction of the students participation in a formal CL activity, than a conventional teaching, its effect is modest. While this study is an important step in understanding the extent to which the proposed pedagogic innovation is correlated with student satisfaction levels, it also leaves some questions open for future research. This study was conducted in only four classes of two colleges in a university. Hence, in order to generalize and validate the findings of this study, we suggest that a similar study be conducted in across the other colleges within the same university and in other universities of the country so that it is possible to examine the robustness of the findings and generalizations.

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## Appendices

## Appendix C

## Student Questionnaire (Intervention II)

**A. Academic challenge**

To what extent has the learning experience of this course has emphasized the mental activities listed below? Scale: 1: very little; 2: some; 3: Quite a bit; 4: very much

Item	Responses			
1) Understanding facts, ideas or methods from your course and readings so you can repeat them in almost the same form	1	2	3	4
2) Analysing the basic elements of an idea, experience or theory such as examining a specific case or situation in depth and considering its components	1	2	3	4
3) Synthesizing and organizing ideas, information, or experiences into new, more complicated interpretations and relationships	1	2	3	4
4) Evaluating the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions	1	2	3	4
5) Applying theories and/or concepts to practical problems or in new situations	1	2	3	4

**B. Active and cooperative learning**

During your class of this course, about how often have you done each of the following?

Scale: 1: never; 2: occasionally; 3: Often; 4: very often

Item	Responses			
1) Asked questions during class	1	2	3	4
2) Contributed to class discussions	1	2	3	4
3) Worked with small groups (4- members) on activities during class time	1	2	3	4
4) Worked with classmates outside of class to complete class assignments	1	2	3	4
5) Taught the class materials to other students in class	1	2	3	4
6) Presented your work to the class	1	2	3	4
7) Gave attention to what other students was saying in class	1	2	3	4

**C. Learning and personal development outcomes**

To what extent has the learning experience of this course contributed to your learning and personal development in the following ways?

Scale: 1: Very little; 2: Some; 3: Quite a bit; 4: Very much

Item	Responses			
1) Written communication skills	1	2	3	4
2) Problem solving skills	1	2	3	4
3) Critically and/or analytically thinking skills	1	2	3	4
4) Learning effectively on your own	1	2	3	4
5) Working effectively with other individuals	1	2	3	4
6) Feeling confident about tackling unfamiliar problems	1	2	3	4

**D) Overall rating**

Overall, how would you rate your entire learning experiences of this course?

Poor  Fair  Good  Very Good  Excellent

Table C1: Squared Semi-partial Correlations for Scores on Five Predictor Variables as a Function of Academic challenge, Cooperative interaction, and Learning Gain (N = 319)

Variables	Academic	Cooperative	Learning
	Challenge	Interaction	Gains
College	.03***	.05***	.03***
Department	.15***	.18***	.13***
Participation group	.01**	.01**	
Age		.01*	0.01
Gender			

*Note:* The squared partial correlation between criterion variable (y) and participation group (x1) represents the proportion of variance in y not associated with any other x's that is explained by x1.

*Significant levels.* \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## **Chapter Nine: Discussion, Conclusions, and Recommendations**

### **9.1. Key Findings and Discussion**

#### **Overview**

This doctoral dissertation brings together various methods and research approaches to critically assess issues of quality teaching and learning in the Ethiopian higher education context. In addressing long-standing and newly emerging contextual issues of quality, this doctoral dissertation examines the theoretical foundations and empirical evidence on what constitutes quality teaching and learning in higher education classrooms. Also, it investigates quality measures used to gauge teaching effectiveness and engagement, learning, and satisfaction in students, and on the use of such measures for evaluating the processes and outcomes of CL interventions.

Systematically explored throughout the iterative cycles is the comprehensive relationship between classroom processes and experiences and outcomes in students. Also, the designs and frameworks of student engagement and CL interventions are tested and validated iteratively through successive implementation. In so doing, this doctoral dissertation exemplifies the process nature of quality improvement, its components, and potential impacts. Above all, it reveals the inextricable linkage between knowledge production by researchers and knowledge utility by classroom teachers. This section of the dissertation interprets the major findings reported in the preceding chapters and places them in the broader context of the academic literature about quality in higher education.

#### **9.1.1. Quality Assurance in the Accountability and Improvement Services**

The first review study, chapter 3, pinpointed some weak areas in the quality assurance policy and its implementation, particularly in the Ethiopian higher education context. Essential elements of the weakness include accountability dominance, methodological flaws, and lack of concern for context. Although the usefulness of quality is often couched in educational terms through empowering people working in the system, and building a culture of engagement (Coates, 2005; Swanson, 2006), in essence, the efficacy of quality assurance lies in its political and ideological nature (Skolnik, 2010). Thus, adherence to externally imposed definitions and structures, and maintaining a common action repertoire is highly emphasized. Moreover, quality assurance has limited scope of information available to serve as

an input for quality improvement. This is so because the institutional aspect of quality is emphasized with this approach, thus did not consider evidence about the day-to-day academic practices or processes, and the students learning experience (D'Andrea, 2007).

These lines of contentions illuminate the importance of modifying quality assurance to have academic considerations and to be flexible in collecting essential data at the individual level. By way of including data at the individual level, the higher education quality assurance becomes more concerned to the micro realities of higher education academe, and more relevant to assist in the improvement of quality. Also, this helps to change the experience of quality evaluation, under the realm of quality assurance, to be more inclusive, intentional and systematic, more focused on evidence, and far more transparent.

Also, the second journal article, reported in chapter 4, sought more data to extend and elaborate on the first database (chapter 3), offered many different perspectives on the quality issues and provided a more complex picture, primarily based on reports from four stakeholder groups, including students, academic members, senior managers, and education quality experts. In general, based on the analysis of the qualitative data, there is a wider quality deficit surrounding teaching and learning in the context of higher education in Ethiopia. This can be partly explained by the lack of stringent quality management system. Moreover, institutional emphasis is on external compliance and accountability than a real commitment to improve. The situation appears to suggest that a compliance culture is proliferating, both nationally and institutionally. The proliferation of compliance culture is being followed by the growing pressure to external accountability, even if it is a poor means of encouraging improvement.

The third article, reported in chapter 5 of this doctoral dissertation further identified a number of weak areas of students' engagement experiences based on a survey adapted from the Australasian Survey of Student Engagement (AUSSE) (Coates, 2010). The low level of student engagement experience that the teacher participants and other stakeholder groups highlighted in the journal article reported in chapter 4 is consistent with the survey findings, particularly regarding student teacher interaction (59%) and the classroom interaction (69%) since the scores for these dimensions in the student engagement survey were found relatively small.

Moreover, despite institution level initiatives undertaken to improve the quality of students' learning through a quality assurance policy and other related efforts the students' enrichment experiences (63%) and the support functions (66%) were found relatively weak. Regardless of this, however, one of the highest rated subscales, that is, integrated learning and out-of class collaboration has a score of 73%. This subscale also explains the most variance explained for the scale. This result indicated that the survey is predominantly represented by the student aspects of engagement. This might be attributable to a couple of reasons. First, the community-based orientation of the studied institution that provides opportunity for students to interact at the different stages of their undergraduate education may help them to create more connections among themselves. Another attribution for this may be the alternative action that students preferred to engage when there is poor interaction with teachers and less support functions available. Under such circumstances, the only mechanism to cope with academic challenge might be through creating more collaboration among the students. A key element of this collaboration is peer support, which is found very crucial for students to survive academic and social challenges while they are in colleges or universities (Pascarella & Terenzini, 2005).

Indeed, this is an interesting result, and it has to be strengthened by creating further opportunities in class so that students interact more academically and get access to interact with teachers, and obtain additional support functions through feedback mechanisms (Johnson & Johnson, 1991). The evidence presented in the journal article reported in chapter 7 and 8 indicated the promises of attaining these benefits through the CL interventions, particularly higher from the inter-group peer assessment and marking using rubrics.

In a situation like the Ethiopian higher education setting where essential learning resources are not readily available, and the students' academic work most often depend on the teacher-made notes and other resources like handouts and modules for the most part, learning the skills of how to learn and become independent, and cooperation among the students is very important (Fink, 2003; Johnson & Johnson, 1991). However, this is possible only when students get access to learn the skills of learning and cooperation, and practiced these in a supervised classroom environment (Johnson, 2003). For a successful implementation, teachers first, ensure that a sense of trust is established and second, that the skills of how to learn and cooperate are explicitly taught. Of course, CL takes time to be effective,

but result shows that the possible gains far outweigh the effort that involve. But before supporting students to gain the skills to work together cooperatively, it is necessary to support the teachers (Gillies, 2004). The need for students become skilful in the regular tasks they are supposed to accomplish for learning, and addressing the personal and social nature of learning are the landmark concerns that socio-cultural theorists have been claiming for since the 1970s (John-Steiner & Mahn, 1996; Vygotsky, 1978).

Seen from the teachers' perspectives, the evidence presented in the journal articles reported in chapter 3 and 4, indicated that teachers most often apply teacher-centered instruction, and had limited interaction with students on academic matters. Also, there is additional evidence that the roles and responsibilities that teachers play was not up to the expectations they were supposed. In addition to this, research showed that an Ethiopian cluster-based in-service teacher professional development program did not effect change in the practices of student-centered pedagogies among the Ethiopian teachers (Piper, 2009). These realities were found in a situation where there are waves of reform after reform, which in effect confirm implementation problems and inefficient reform more in practice than in theory (Schweisfurth, 2011). The above lines of discussion highlight the hidden quality gaps that appear potent on the surface.

Despite national and institutional calls for student-centered learning and the prime importance of problem-based approach, a learner-centered pedagogy and authentic problem solving are often operationally absent in the studied colleges. The teacher participants at various stages of the research project had described the notion of learner-centered approach as ideal, which was not realized as anticipated due to several local constraints. With regard to continuous assessment and its implementation, as in the views of the majority of participants, it is still examination-driven, and focused on recall and memorisation rather than learning and understanding. In sum, the gap between policy and practice, as in the studied colleges' contexts, is extremely wide, where the learner-centered approaches and continuous assessment strategies, are far harder to achieve in practice than in policy. Thus, a traditional pedagogic practice is commonplace, rather than, for example, one based on the development of meaning; inquiry-based pedagogical strategies.

Some believe that people in the higher education sphere are essentially rational, so reason and evidence should do the main job to establish a quality improvement culture (Strydom, Basson, & Mentz, 2012). Others find that the contextual nature of quality improvement is the most powerful as awareness, interest, trial, and adoption to new educational ideas and practices occur through a process of social interaction and persuasion (Trowler, 2008). Still others believe that the main obstacles to quality improvement are not impressive messages, nor social influences, instead they viewed that philosophical and pedagogical stances and psychological barriers as the main problem. Yet another group maintains the political and ideological nature of quality improvement since its efficacy lies on the vested interest of those who are in the leadership roles (Tabulawa, 2003).

The central message behind these assertions is that effective quality improvement requires working in multiple dimensions: rational, social-interactional, psychological, and political. In order to address these and ensure participation of various stakeholders in the quality improvement process, this doctoral dissertation established a multidimensional quality development model. This model consisted of multiple dimensions and anticipated mutual responsibilities and ownership for quality. With the help of this model, this doctoral dissertation explores quality problems more broadly, offers different perspectives and more complex picture of the situation. Also, it applies a series of CL pedagogic interventions to facilitate the cultivation of effective educational practices and maximize students' engagement and learning.

The proposed model was derived from the theories of student engagement and CL pedagogies. These engagement and CL theories have direct implications in both advising individual studies and in designing intervention programs to mitigate quality problems. Thus, the approach is methodologically sound to address quality problems in a more effective and efficient way. Targeting such all-inclusive areas of focus like student engagement and making use of a multidimensional framework like CL are useful avenues to address quality problems even in circumstances with little resources and expertise. This model provides more comprehensive and dynamic ingredients to boost up the quality of teaching and learning.



### 9.1.2. Engagement-Based Quality Improvement Model

**Key Areas and Interaction.** Considering the various problems surrounding the students' academic engagement in the studied two colleges, this study recommends a quality improvement model that aspires to change the established academic norms at the classroom level through an integrated focus on student engagement and CL. Figure 9 illustrates the components of this proposed model and the people dynamics.

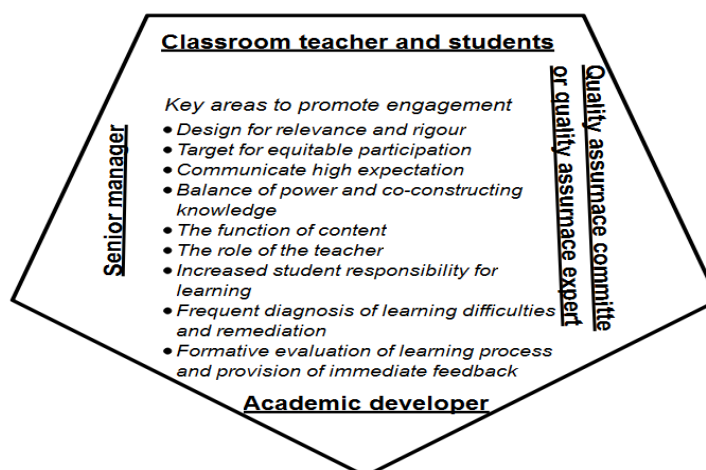


Figure 9. Engagement-based quality improvement model: Basic components and end-users.

The model involves key components of instruction with each component describing an essential pedagogic ingredient as illuminated by research and practice. If these components are incorporated into the capacity building strategies of the academic development endeavour, they are likely to produce positive results. The higher education literature on student engagement and cooperative learning, particularly, the wealth of resources suggested by leading contributors in these fields served as sources of the model components (Chickering & Gamson, 1987; Johnson, Johnson, & Smith, 2007; Jones, 2008; Kuh, 2008; Lumpkin, 2007). Quality improvement in student learning most likely occurs when there is a continual reflection on the institution-wide practices, and a leadership commitment to allocate necessary resources. Chickering and Gamson (1987, p. 63) state: "There are neither enough carrots nor enough sticks to improve undergraduate education without the commitment and action of students and faculty members. They are the precious resources on whom the improvement of undergraduate education depends."

For students learning to be meaningful and thoroughly understandable, students should be engaged in various cognitive tasks such as analysing, problem-solving, synthesizing, and evaluating (Haggis, 2006), and participate in activities that

demand the construction and co-construction of knowledge (Kamp, Dolmans, van Berkel, & Schmidt, 2012). The students participations in these activities provide them the opportunity to start thinking about what they are learning and apply what they have learned (Sharan, 2010).

Students become independent learners, when teachers give them positive feedback more frequently (Lumpkin, 2007), design learning activities that are optimally challenging (Jones, 2008), and create a more positive and interactive classroom environment (Klem & Connell, 2004). Also, important is helping students find personal meaning and value in the learning material, and help them develop a feeling as a valued member (Gillies, 2007; Johnson, et al., 2007). Similarly, when students experience high expectations and receive positive support from teachers and peers, they are likely to experience greater engagement (Chickering & Gamson, 1987). Research shows that the extent of support for learning that students receive from the groups influences their engagement (Fulton, 2009). Moreover, a positive institutional environment, which is characterized by respect, fairness, safety, and positive communication, supports students' engagement and learning (Johnson, Johnson, & Smith, 1991).

### **9.1.3. The Effects of CL Pedagogies in the Higher Education**

There is a marked difference between simply having students work in a group and structuring *small* groups of students to work cooperatively. Simply putting students into groups is not, to be a cooperative group, as there is no positive interdependence. Instead, this yields pseudo groups with no common binding goals (Johnson, Johnson, & Smith, 1998). Such an arrangement is more likely to replicate and reinforce the prevailing inequities of the social structure than to alleviate the problem. Elizabeth Cohen (1994) analysis provides better insight in to the realities how events played out with this sort of arrangement.

In groups, participants who are perceived as 'less able' (a) tend to talk less, or, when they talk, their ideas tend to be ignored by others; (b) have difficulty 'getting their hands on' materials and information; (c) may look passive and uninvolved or may exhibit poor behaviour. In learning situations, low-status students learn less; this is a vicious cycle since, as these students learn less, perceptions that they are 'less able' increase. (p. 17)

Thus, a paradigm shift in the quality improvement or reform initiatives is very much needed, if quality improvement is to become effective and bring about meaningful change in practices. For this, the approach to quality improvement applied in this doctoral dissertation, considers the complex nature of quality, and the views and perspectives of different stakeholders.

Moreover, the systematic approach to quality improvement comprising of informal CL implemented before addressing more advanced quality issues highlight the relevance and ease of use of integrating new quality improvement initiatives with the existing tradition, values, and norms (McLaughlin, 1990). While this helps to embed new reform agendas with the traditional forms of instruction, it also assists as a motivation device to those who are working in the system. Above all, this helps to empower and establish ownership by those who make change or reform a reality in the actual classroom setting. After that approaching quality improvement using a high level target and strategies would be much realistic as empowerment and ownership yield extra energy to handle greater challenges. In the intervention studies reported in the articles presented in chapter 7 and 8, this doctoral dissertation applied this approach and the results as shown in the reports were indicative of the possibilities of achieving several benefits.

Using CL pedagogies in instruction affect teacher performance, and could bring both academic and social benefits for the students (Pescarmona, 2011; Yamarik, 2007). The results of the qualitative interviews reported in chapter 6, 7, and 8 indicated that teachers were not passive recipients of the proposed CL pedagogies and have appropriated that in multiple unique ways to suit different purposes and learning contexts. Also, the students have shown active participations serving the role of significant partners rather than simply pawns to the CL intervention.

A study by Johnson et al. (1991) compared the effects of CL with the traditional instruction and examined instructional conditions, demonstrating that CL on a series of measures: academic and social outcomes were higher than the traditional instruction. Also in a number of meta-analysis studies, CL was found more productive than the traditional forms of instructions in higher education classrooms with the effect sizes across measured constructs ranging between .29 to .68 (Johnson & Johnson, 2002; Johnson, et al., 1998; Springer, Stanne, & Donovan, 1999). The intervention study reported on chapter 6 of this doctoral dissertation examined the effects of CL instructional conditions, including teaching effectiveness,

task orientation, academic challenge and interactivity and cooperation on two outcome measures: student satisfaction and gains. The findings for the total group showed that these variables significantly predicted scores on student satisfaction and learning gains, as measured by the adjusted  $R^2$ , accounting for 69% of the variance in student satisfaction, and 52% of the variance in learning gains. The pedagogical variable “cooperative interaction” explains the most variance in the scores of student satisfaction ( $\beta = .59, p < .001$ ) and learning gains ( $\beta = .61, p < .001$ ), followed by “task orientation” predicting the scores of student satisfaction ( $\beta = .48, p < .001$ ) and learning gains ( $\beta = .43, p < .001$ ).

Moreover, the results of the  $t$  tests for the other two successive interventions reported in chapter 7 and 8 indicated that, compared with the traditional instruction, CL instruction attain significantly higher scores across the measured seven variables and had modest to moderate effects (Cohen’s  $d = .21 - .42$ ). Also, the results of the regression analysis indicted several significant findings. As seen in Table 12 and Table 17, the predictor “participation group,” though modest, explains significant proportion of the variability explained in five of the six dependent variables. In terms of the strength of prediction, it appears clear from the results of the regression analysis that the predictor “participation group,” using informal CL group, has relatively higher predictions (4-5%) on the dependent variables teaching effectiveness, task orientation, and learning satisfaction,  $.19 \leq \beta \leq .21$ . Also, the same predictor “participation group,” using formal CL group, has significant, but relatively lower predictions (1%) on the other 3 dependent variables: academic challenge, cooperative interaction, and learning gains,  $\beta \geq .12$ . These results appear to suggest that CL pedagogies have, on the average, modest to moderate levels of influence on the educational practices, students’ engagement and learning compared to traditional instruction. Thus, a teacher might expect, in general, that using CL pedagogies will help to enhance the quality of classroom instruction and increase student engagement and learning.

Although definitive conclusions cannot be made about these effects based on students ability level and major fields, the findings suggest that time spent in classroom instruction via CL pedagogies may be beneficial if that time is spent properly in intellectually engaging activities. Based on the results of this doctoral dissertation it is possible to deduce that participation in a CL instruction provides

several benefits to improve classroom practices and facilitate student engagement and learning.

The identification of the different CL methods and the host of strategies used to apply them are also helpful findings in that they provide a model for higher education institutions to strive for improving teacher performance and increase student learning. Regardless of these facts, teacher performance was somehow constrained and that there were missing opportunities for much stronger performance because existing academic culture negatively affected the implementation process. Particularly, issues related with unfamiliarity, time, and learning resources. Students' background and their preparedness for CL classes were critical issues. Moreover, inequitable participation during the CL lessons resulted in unbalanced participation level and wasted opportunities for learning. Also, the classroom arrangements had several problems related to the suitability of room arrangement, lighting and instructional resources.

#### **9.1.4. Essential Ingredient of CL Pedagogies that Appears Effective with Undergraduate Students in Ethiopia**

The informal and formal CL activities included in the articles reported in chapter 6, 7, and 8 typically demand that students, both individually and in group, devote considerable time and effort to purposeful tasks. Informal CL activities, as demonstrated in chapter 6 and 7, provide students the opportunity to participate in classroom activities and develop a conceptual understanding of a topic. Formal CL activities, applied in chapter 6 and 8 of this doctoral dissertation, allow students participants to become more responsible for their own learning and cooperate among themselves to manage large portions of the lesson.

In the intervention studies reported in chapter 6, 7, and 8, the researcher used to form students groups based on their gender and CGPA of previous semester to maintain heterogeneity of group members. The composition of the students group, coupled with, the small size of the working group (2-4 members) ensure that every student had the opportunity to learn by his/her own, at the same time, assisting the work of others when needed. In those CL lessons, the teacher facilitated the process so that he/she advise students how to deal with the cooperative learning task. As the intervention participant teachers commented: "diagnosing students' problems and providing necessary support" were essential roles in the CL lessons. Student

participants of the intervention also pointed that close proximity with the teacher and frequent feedback were important features of the CL lessons. In addition, the teacher gave academic support through ongoing conversations in-between the CL activities and after completion of each CL lesson. The students benefited more, especially as they had frequent feedback from the teacher, group members, and students in the other groups. As most interview participants pointed, they engaged more frequently in educationally purposeful activities such as co-construction of knowledge and sharing their experiences during the CL activities, and reported gaining more from such activities compared with their experience in the traditional teaching approach.

Most of the interview participants of the intervention studies described, working with a fellow student on co-constructing knowledge and having a peer group assignment paper checked by a peer assessor group as rich with opportunities for immediate feedbacks. On top of that, participation in the different CL activities provides opportunities for students to integrate, synthesize, and apply knowledge in a more deep and meaningful way. Through doing one or more of these activities in the context of coherent, academically challenging course, students not only felt comfortable and satisfied, but also –in the words of Johnson and Johnson (2002) – *achieve more*. Such an undergraduate experience deepens learning and helps students to develop the ability to take actions and put them in perspectives.

When students are asked to work cooperatively, they may have a tendency to work with an initial, simple idea or different idea than the teacher anticipated. The idea, as it was revealed from the intervention teachers interview, had often been offered by a high-status, dominant group member without consultation with others. This can lead to a lack of focus on the anticipated theme resulting in wastage of time, or may lead to premature cognitive commitment that can hamper conceptual diversity to emerge. To encourage students' focused *small* group work and the possibilities of accommodating conceptual diversity, it is important for Ethiopian teachers (a) to use strategies to ensure that all students share their ideas. As one intervention teacher participant very well stated "systematically suppress those dominant students and frequently ensure that students have got the main point and they are working on that." When students are working together, the use of paper-and-pen, to record their ideas and develop wider conceptualization, can be a very important first step upon which the wider cooperation and sustained cognitive engagement are built. In a true CL environment, it is much easier for group members

to accept, reject, and combine ideas that have become group property than it is when ideas have remained rather something personal.

Moreover, the systematic approach to quality improvement comprising of a developmental perspective using informal CL approach implemented, in conjunction with, the traditional lecture-based instruction highlight the relevance and ease of use of integrating new initiatives with the existing tradition, values, and norms (McLaughlin, 1990). While this helps to embed new reform agendas with the traditional forms of instruction, it also assists as a motivation device to those who are working in the system. Above all, this helps to empower and establish ownership by those who make change or reform a reality in the actual classroom setting. After that approaching quality improvement using a high level target using formal CL strategies would be much realistic as empowerment and ownership yield extra energy to handle greater challenges. In the intervention studies reported in the articles presented in chapter 7 and 8, this doctoral dissertation applied this systematic developmental approach and the results as shown in the reports were indicative of the possibilities of achieving positive benefits.

Doing things better and doing better things are not the same, but much related (Elton, 1994). It is clear from the reports of the journal articles in chapter 7 and 8 of this doctoral dissertation that the CL interventions consisted of these issues. For example, embedding informal CL in the traditional lecture well represents the notion of doing things better, and the innovative way of designing and implementing formal CL can be a good example of doing better things as Elton proposed. Based on the results from these two intervention studies, this doctoral dissertation provides empirical evidence how these relevant quality improvement or change approaches can be arranged to produce significant change in the quality of teaching and learning in Ethiopia. It is suggested that the two approaches can be utilized for two different but related purposes. The precedence of doing things better before doing better things has lots of advantages from the quality improvement perspective, in terms of providing motivational, informational, alignment, and enrichment functions. As these essential elements are parts of the equation for a successful quality improvement in practice, higher education institutions who are interested to make real changes in classroom practices and address complex problems of quality need to take account of such a developmental arrangement.

### 9.1.5. Assessment for Quality Improvement in Higher Education

This doctoral dissertation assessed the validity of the different scales reported in chapter 5, and for each of the three interventions subgroups reported in chapter 6, 7, and 8. This is conducted using descriptive statistics, inter-correlations, scale reliabilities, and confirmatory factor analysis. The PCF procedures were applied for item screening at the initial stage and highlight the dimensionality of the scale. First, the data were examined at the item level, to investigate whether the proposed factor structure held utilizing a minimal number of measuring items. Next the researcher examined the data at the scale level to cross validate the item-level results, the reason being that aggregate data at the structural level provides evidence on the psychometric properties of the scale that the item level data can not reveal. Through these processes, the robustness of the student engagement and other impact assessment scales were comprehensively assessed, ensuring the convergent and discriminant validity of the scale. Overall, the items from each scale displayed convergent validity with one another, and discriminant validity from the other dimensions. All intra-measure correlations were higher than any correlations between items from different measures.

Pearson correlation matrices were conducted for the total sample group of the student engagement scale reported in chapter 5, and for each of the three interventions subgroups reported in chapter 6, 7, and 8. The variables were the nine student engagement subscales, the four pedagogic subscales for CL instruction, and the six pedagogic and learning outcomes subscales. Total group inter-correlations as presented in Table 4, Figure 4, Figure 5 and Figure 7 revealed significant inter-correlations among the subscales for each scale measured ( $r$  ranging from .15 to .85,  $p < .001$ ). These correlations range between low to high correlations. Close to Two-third of the inter-correlations in the different scales are moderate to high correlations ( $r$  ranging between .35 - .85). All these values are the results of inter-correlations assessed among the different subscales. Also, these subscales were drawn out of the literature in the areas of student engagement and CL. Thus, their theoretical foundations as well as empirical evidence were warranted. This verifies that the different subscales used in each scale were based on what matters most for the students learning.

Part of the nine sub-scales generated from the CFA for the student engagement scale fed to the other two intervention studies reported in the journal



articles presented in chapter 7 and chapter 8. In addition to this earlier verification, the two intervention studies also checked for the construct validity and discriminant validity of the survey, along with, a factorial validity test using structural equation modelling (*SEM*). Results of the different validity checks as reported in chapter 7 and 8 confirm validity evidences. Thus, the instruments used for assessing the effects of CL intervention were repeatedly tested for construct validity and involved factorial validity as well. These collectively provide supporting evidence for the robustness of the impact assessment instruments thereby the reported results in this doctoral dissertation.

Also, the findings of this doctoral dissertation consist of other relevant concerns of continuous assessment by including discipline specific rubric and scoring criteria. While the relevance of these tools and assessment methods are crucial, their practicability and appeal to the students involved in this doctoral research provides evidence of support to promote assessment for learning and the possibility of maximizing students learning from such practices.

## **9.2. Conclusions**

Based on the findings of this doctoral dissertation, there seemed a general concern about the quality of teaching and learning in the higher education in Ethiopia. However, a number of perspectives merit observation. There are policies in place with contemporary educational ideals, yet that did not translate into classroom practices. It becomes apparent from the evidence sought for this doctoral dissertation that the Ethiopian HE system provides greater emphasis on the culture of quality review and less focus on how to improve the quality. For instance, quality assessment efforts have not been linked well with effective improvement of the quality. Moreover, there were quality assurance criteria and measures as opposed to quality improvement criteria and measures.

Most of the time students used to attend lectures and their classroom learning experience was limited to superficial learning. Also there are several implementation problems and students and teachers dissatisfactions with the current educational and assessment practices. Both the qualitative investigations and the quantitative survey revealed the presence of quality problems in several dimension, particularly in terms of interaction between teachers and students, support functions, and enrichment experiences. Moreover, misalignment is apparent between the different

hierarchies of the higher education system and across the curricular components. As per the results of the article reported in chapter 4 of this doctoral dissertation, different stakeholder groups of higher education have different perspectives and views on quality teaching and learning. Whereas some peoples of the HE system like the senior managers and education quality experts more trust in the establishment of policies and guidelines as crucial for quality and expect positive results, others like students and teachers were more concerned about the implementation and the negative outcomes brought as a result.

In general, there is a wider quality deficit surrounding teaching and learning in the context of higher education in Ethiopia. This is attributable mainly to the lack of stringent quality management system and a lack of focus on what matters most for the students learning. Moreover, institutional emphasis is on external compliance than a real commitment to improve the quality. The situation seems to suggest that accountability driven compliance is proliferating, both nationally and institutionally. Besides, the different quality assessment experiences did not produce positive results since there is misalignment between quality assessment and improvement. The net effect was that there has been little visible improvement in the higher education system.

Building on the strengths of student engagement and CL models, this doctoral dissertation presented supporting evidence that demonstrates the worth of maintaining integration and harmony across internal stakeholders to build a microcosm of quality improvement hub at the classroom level. Working with students and teachers, and applying a blend of empirical educational research with the theory-driven design of learning environments, this doctoral dissertation provides supporting evidence on what constitutes quality in higher education classrooms. This illuminates how significant learning occurs, the strategies that teachers use in supporting their students learning, and how to design effective learning systems. This study provides support for CL pedagogies in which student engagement and learning can be achieved through designing and implementing undergraduate courses. Measuring the impacts of such intervention initiatives can be possible using multiple indicators that are proven evidence of construct validity, discriminant validity and factorial validity.

The correlation analyses results, ( $.26 \leq r \leq .85$ ) reported in the articles on chapter 6, 7, and 8, demonstrated modest to strong correlation to one another, and

the model fitness statistical tests and practical indices reported in chapter 7 and 8, for example, a CFI .95, .97, and RMSEA .040, .055, highlight the robustness of the six constructs used to measure the impacts of CL interventions as applied in the Ethiopian higher education classroom context.

Both quantitative and qualitative results of the articles reported in chapter 6, 7, and 8 consistently demonstrated a number of meaningful factors that are interwoven in a complex ways. For example, the students and teachers participants shared their stories of how they experienced the CL groups that revealed how the classroom practices, students' engagement and learning developed. Also, these studies reveal several positive outcomes. The relationship between students' *small* group activities and their learning outcomes as evidenced in the journal article presented in chapter 6 of this doctoral dissertation, was ranging from modest to moderate scores ( $.27 \leq \beta \leq .61$ ). These values are the results of causal relations assessed among the pedagogical factors representing a CL condition vis-à-vis the outcome measures: students learning satisfaction and gains. Students attending undergraduate courses of the same discipline are more likely to have higher engagement experience and learning, if they are attending courses via the CL pedagogies of both informal and formal types.

Moreover, the results of the *t* tests from the articles reported in chapter 7 and 8 of this doctoral dissertation showed that participation in the CL intervention compared to participation in the traditional lecture had a significant difference in the scores of six measuring constructs with the effect sizes ranging from .21 to .42, which indicate modest to moderate effects (Muijs, 2011). Also, the multiple regression results indicated, participation in the CL (formal and informal) make a significant contribution to the prediction equations,  $.12 \leq \beta \leq .21$ , in five of the six measured subscales. The multiple regression results suggest that undergraduate students regardless of their colleges and departments are more likely to have higher engagement experience and learning satisfaction, if they are involved in the CL pedagogic practices than in the traditional lecture.

Cooperative learning researchers believed that an effective CL instruction, in which individual accountability and social interdependence are maintained and students have the group processing skills, is the best approach to creating a significant learning experience. Overall, the findings from the different articles of this doctoral dissertation are in line with the international literature. This gives extra

confidence that where findings specific to the current Ethiopian university context have emerged, they can be regarded as valid and reliable.

As a new approach to the higher education practitioner teachers, these empirical works illuminate the decisiveness of such interventions in mitigating quality problems and the salient roles of institutional and classroom cultures in the implementation process. The major findings from this doctoral dissertation reveal that contextualizing a pedagogic intervention is definitely a local phenomenon that arises as a result of a number of factors, including the pedagogical values and practices of classroom teachers, the nature of the course, local constraints, the willingness and active engagement of students, their background, needs, and aspirations, and other unforeseen local constraints. It is important to highlight that quality improvement requires the undoing of negative practices, not just the addition of supportive policies. Often reports and recommendations nationally only speak to the inclusion of new policies to support teachers, but negative practices also need to be dismantled as these negative practices are the results of long-held traditions. The results reported in the articles reported on chapter 6 and 7 of this doctoral dissertation provide supporting evidence how embedding new pedagogies into the existing traditional lecture can be systematically approached and the potential outcomes.

This doctoral dissertation provides relevant data (qualitative & quantitative) that demonstrates how a shift in focus from delivering information to engaging students in a CL (formal & informal) instruction greatly improves the student engagement experience and significant learning. Thus, it is possible to conclude that the CL pedagogic intervention is a robust and comprehensive approach to quality improvement in the higher education context in Ethiopia.

### **9.3. Recommendations**

Based on the major findings, this doctoral dissertation recommends ways of overcoming the quality issues, as well as, future avenues for research. To make the recommendations more focused and specific, they are organized under the following four themes: higher education system, higher education leaders, teacher practitioners, and students, academic developers, higher education researchers.

### **9.3.1. The Higher Education System**

The way forward for better quality teaching and learning in the Ethiopian higher education system requires multiple focus and actions, comprising of a paradigm shift from accountability to transformation. This doctoral dissertation recommends improvement-led quality that contains broader dimensions such as culture and history, quality assurance, and the existing educational practices at a system level. While this dimensionality provides opportunity to tease out quality problems from different perspectives, practice proves the contextual nature of quality improvement, its dynamics and complexity.

The proposed quality improvement model is mainly characterized by internal-driven initiative, comprising of research-based tools and context appropriate intervention packages. Under this influence, a more realistic improvement, placing the responsibility on those who can affect change, and providing them ownership and control over the improvement agenda will be ensured while engendering a responsive and responsible approach. Through a repeated implementation of the intervention, the model promotes positive relationship between the students and the teacher and more interaction among the students themselves, thereby changing the academic norm. The key elements of this model include a shift in focus on the roles of the teachers and the students learning experience, and the development of active and cooperative learning environment. Hence the model entails empowerment and enhancement of the people and changing the learning environment into more interactive and all inclusive type. By doing so, the model promises the involvement of the teachers and students into the quality improvement equation.

It has been widely argued that quality improvement is transformative and requires implementing a deliberate fundamental change process, that is, directly concerned with adding value and empowering people (Harvey, 2002). Central to this perspective on quality is the placement of student learning at the core (Carmichael, Plaermo, Reeve, & Vallence, 2001), leading to a focus on students and their experiences (Trowler, Fanghanel, & Wareham, 2005). Hence, with this notion, the emphasis is on improving processes and services towards learning rather than assessing perceived quality of outputs (Houston, 2007). This is the greatest challenge that requires a fundamental commitment to improve in terms of bringing about those circumstances in which all individuals could realize their potential

(Jackson, 2003). The lived experiences of the six teachers and their students presented in chapter 6, 7, and 8 reflect the developmental process.

Ongoing evaluation, and review of the quality should centre on contemporary perspectives with a focus on learning rather than teaching, improvement rather than accountability, and learning and transparency rather than control and official reporting (Harvey & Newton, 2007). Also important is the need for students to experience a balance of significant learning beyond foundational knowledge through incorporating multiple dimensions of learning and personal development (Fink, 2003). To this effect, it is important to strengthen teachers' capacity to use several instructional activities and methods, and to appropriately embed the generic capabilities and cross curriculum priorities across the different learning areas (Levine et al., 2008). Doing so provides several benefits supporting concerns and efforts towards transforming the quality of teaching and learning process, and maximizing students' learning across a range of dimensions (Fink, 2013). This helps not only to promote education for the economic profits but also to develop in the students' the capabilities to self-dependent decision making and criticize traditions, appreciate the socio-cultural nature of learning and personal development (Nussbaum, 2010).

### **9.3.2. Higher Education Administrators, Students, and Teacher Practitioners**

The key step in the improvement of quality is to start the process. It is believed that, internally induced quality improvement in the academic area will not be effective if imposed on academic staff or teachers by the administration or other external bodies. Even though strong administrative leadership is important, the entire quality improvement process must be based on a sense of collegiality between and among academic staff and senior managers. After all, each stakeholder has the responsibility to safeguard quality, starting from the top officials at the institution level to a particular teacher for a single course. Quality improvement is a mutual responsibility among different stakeholders such as students, teachers, education leaders, parents, employers, and peoples from HERQA and the Federal Ministry of Education. But it should be clear that it is one thing to establish a quality assurance system and quite another to build a culture of quality and continuous improvement. Quality improvement is a process; that is, developed by university leaders and managers involvement, complemented with, a widespread support from the university academics so that it can be owned by the university community and will

most likely be taken seriously. This way developed quality improvement, ensures joint ownership and will remain longer and fine-tuned within the institutions academic culture.

In order for Ethiopian higher education teachers to make changes in classroom practices, they need to know more than that there is a global link between instructional condition and performance. They need to know what specific types of instructional conditions are most salient to transform classroom practices and what sorts of institutional and classroom cultures are most salient to support teacher's roles and engagement and learning in students. Research shows that institutional and classroom cultures play pivotal roles in the teacher performance and student learning (Kezar & Eckel, 2002). A better understanding of the specific contexts in which classroom practice takes place may enhance our understanding of what instructional conditions affect teacher willingness, capacity, and opportunity to perform. In this doctoral dissertation, specific CL pedagogic approaches have been systematically applied to change classroom practices and determine whether this impacts teacher and student willingness, capacity, and opportunity to perform.

Although the critical link between CL pedagogies and changing actual classroom practice must be acknowledged, pedagogic innovation works best when researchers or academic developers acknowledge existing realities, classroom cultures and implementation requirements (Lattuca & Stark, 2009). This requires understanding and sharing the meaning of pedagogic innovation, providing opportunities for adaptations to cultural circumstances, local constraints, and internal capabilities throughout the system (Squire, MaKinster, Barnett, Luehmann, & Barab, 2003). For CL pedagogies to take root in the Ethiopian higher education cultural context, both teachers and students need to understand the underlying idea, be motivated and supported to change practice, adapt and apply appropriate CL pedagogies, and have the capacity to do it as part of their routine classroom discourse. A sense of ownership on its own is not enough to change classroom practice.

As improvement-oriented quality evaluation is an ongoing process, students should be asked to reflect on various aspects of their experiences and to think about how the activities they had during the CL lesson contributed to their ability to work effectively with others and enhanced their academic performance. It is inappropriate to anticipate promoting student engagement in learning without a focus on changing

the way they learn. In other words, learning how to learn by itself is a skill and learning will be much easier if students have the skills on how they grapple with the learning materials within a discipline. To encourage cooperation and stimulate students' interest in learning, teachers need to plan for, and invest the time in, the direct teaching of interpersonal and small-group learning skills.

### **9.3.3. Academic Developers and Others Support to Quality Improvement**

Academic developers and others concerned with quality improvement need to understand that provision of policy guidelines or running staff development workshops are not self-sufficient entities for a real quality improvement. Instead, during implementation, those educational ideas conveyed via policy or training becomes assimilated as part of the classroom culture. It is believed that by understanding these fundamental aspects of quality improvement and getting involved in the process, Ethiopian higher education institutions would be in a better position to build a quality improvement culture that not only enable local accomplishment, but are scalable to meet the needs of much broader stakeholders.

Although quality assurance is necessary to make sure that minimum requirements are met, the assurance process does not always translate into an understanding of how to help staff members and students in creating a positive learning environment. It is important to highlight that quality improvement is far beyond meeting minimum quality as it tends to be more concerned with the undoing of negative practices, and finding ways to improve them. Teaching and learning centres, like ADRCs in the Ethiopian HE context, have immense contributions in developing and validating research-based tools for quality assessment, and in initiating and assisting formative quality improvement. It is believed that such work is in stark contrast to quality assurance measures and far more supported by instructors.

### **9.3.4. Limitations of the study and future research directions**

The primary limitations of the different studies included in this doctoral dissertation relate to the student engagement items. The student engagement data (chapter 5 - 8) represent a snapshot in time, include a limited number of questions possibly omitting some educationally relevant activities, and rely on student self-reports from respondents. In particular, the study does not directly assess learning



outcomes, but students' perceptions of the degree to which they are engaged in the academic and non-academic experiences and the extent to which their learning experiences in their respective colleges contributed to their learning.

Furthermore, the intervention studies (chapter 7 & 8) share a common limitation with many other design experiments: lack of random selection and assignment of study participants to intervention and comparison groups. Instead, the researcher used a random selection of classes of students already assigned by the respective department. Thus, classes of intervention and comparison groups were assigned using simple random sampling of the classes rather than the students themselves. The analyses of the results in chapter 7 and 8 indicated that some statistically significant differences existed between intervention groups and comparison groups in six of the seven variables measured. Without random assignment, there is no statistical control over what might be relevant but unmeasured differences between the intervention group participants and the comparison group participants.

As any classroom trial of innovative teaching, the CL approach included in this doctoral dissertation has the potential to artificially stimulate teachers' and students' motivation by way of introducing sources of novelty and variety into the classroom. Along with, the teacher enthusiasm may be stimulated, and this also contributes for the students' increased motivation. These potential limitations need to be considered as having positive effects, and therefore, the prospect of positive outcomes for the CL interventions, beyond what might be expected in a more enduring situation. The other limitation is that the CL effect is measured based on perceptions rather than actual measures of teaching performance, student learning experience, or learning outcome.

While the casual relationships of the different pedagogical variables on the differential outcome measures is conclusive for the studied classroom contexts, more empirical work is very much needed to test the generalizability of these findings on other higher education contexts. A better understanding of the specific contexts in which CL instruction takes place may enhance our understanding of what instructional conditions of CL affect student outcomes. The same institution may be willing to conduct self-analysis in order to identify whether and how their prevailing institutional and classroom cultures are impacting teacher classroom practices and

the student engagement and learning among students. This line of future research is important for higher education researchers.

For a student engagement scale, establishing the convergent and divergent validity based on data in two colleges of a university is just the beginning of the validation work, and further extensive work is needed to establish a nationally validated and usable scale. This study recommends for a further study of assessing whether or not the 9-factor model of student engagement that emerged from the PCF analysis fits the data so well. An essential element of this is the apparent inclusion of model adequacy tests. Moreover, assessing more advanced validity concerns such as measurement invariance across different categories of students, for example, based on gender, class year level, college and major field can provide more validity evidence to generalize that the modified student engagement survey is valid across several categories.

The various models and frameworks identified through this doctoral dissertation provide a set of evaluation areas and quality measures for institutional researchers to develop such studies. In the end, it is hoped that this doctoral dissertation helps in re-shaping quality improvement to better support classroom practice and engagement and learning in students. Understanding the potential influences of CL classroom condition and how to arrange them systematically provide a foundation for further research of other potentially related variables.

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