Conceptions of teaching & learning and teaching approach preference: Their change through preservice teacher education program

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Abstract: This study investigated the change in pre-service teachers’ conceptions of teaching and learning and teaching approach preference over the course of a teacher education program. One group pretest-posttest design was employed. Conceptions of Teaching and Learning Questionnaire (CTLQ) and Approaches to Teaching Inventory (ATI) were used for data collection. Two hundred ninety three (293) randomly selected pre-service secondary student-teachers admitted to Post Graduate Diploma in Teaching (PGDT) program in two Universities were participated in the study. Participants didn’t exhibit significant changes in their teaching approach preference and beliefs about teaching and learning – participants favored teacher-dominated teaching approach and more traditional in beliefs about teaching and learning. At the end of the nine-month-long teacher preparation program, the student-teachers seemed to view learning as recalling and absorbing as much information as possible and teaching as simply telling, presenting or explaining the subject matter. Their teaching approach preference was also found to be consistent with their conceptions of teaching and learning.

Subjects: Higher Education; Theories of Learning; Teachers & Teacher Education; Classroom Practice

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PUBLIC INTEREST STATEMENT
This study revealed that student-teachers come to the teacher education program with traditional conceptions of teaching and learning. This was found to be in contrast to what the curriculum of the teacher education curriculum in Ethiopia has dictated. Even though the teacher education was expected to influence the student-teachers’ entry behavior, no significant changes was observed at the end of the 10-month-long training. I argued that the learning environment in which these student-teachers exposed to might not be an environment that challenges the student-teachers’ established conceptions of teaching and learning. Moreover, the length of the training (i.e. being short) might have played significant role. The study emphasized that the only way for student-teachers to develop constructivist conceptions of teaching and learning, they have to be exposed to constructivist learning environment.
Key words: conceptions; constructivist conception; student-teachers; teaching approaches; traditional conception

1. Introduction
A better understanding of student-teachers’ beliefs about teaching and learning has been considered as a valuable tool for improving the effectiveness of teacher education in general and student’s learning in particular (Brophy & Good, 1986; Chant, 2002; Cheng et al., 2015; Cross, 2009; Handal & Herrington, 2003). It is because, these authors argue, that knowledge about student-teachers’ beliefs and belief systems are considered as pre-requisite for better understanding of both student-teachers’ learning processes and their later behavior in classroom settings as a professional teacher. Koballa et al. (2000) pointed out that identifying and assessing teacher candidates and their ideas in relation to classroom practices is an important function of every teacher education program. Pajares (1992) and, more recently, Richardson (2003) have also discussed a pressing need to better understand teachers’ beliefs and gain insight into changes of beliefs in order to improve both teacher education and classroom practice. Bryan (2003) suggested that teacher trainers can benefit from knowledge about their students’ beliefs and use such knowledge to better facilitate trainees’ learning and professional development.

Justifying the need for assessing and identifying student-teachers’ beliefs about teaching and learning, Northcote (2009) underlined that teachers’ conception of teaching and learning can play either a facilitating or an inhibiting role in translating curriculum guidelines into the complex and daily reality of classroom teaching. Correspondingly, Nesper (1987) and Borg (2005) insisted that teachers’ conceptions will play an influential role in the acceptance or rejection of educational reforms. Handal and Herrington (2003) contend that if the teachers’ beliefs are not congruent with the beliefs underpinning an educational reform, then the aftermath of such a mismatch can affect the degree of success of the innovation. On the other hand, if teachers hold beliefs compatible with the innovation then successful implementation of the reform will be more likely to occur. For reforms in teacher education to be accepted, integrated, and activated in the behavioral repertoire and practice of student teachers, according to Kagan (1992), they have to develop conceptions in congruence with the new reforms.

Scholars in the field of teacher educations (e.g., Chai et al., 2009; Deng, 2004; Marouchou, 2011) are insisting that student-teachers’ beliefs should be more deeply researched. The reasoning behind this is that a thorough understanding of student-teachers beliefs would inform teacher education program in general and teacher-educator in particular about the way forward in moving potential candidates in the direction of more modern theories about teaching and learning. Such research would reveal relevant, widely held beliefs and enrich our understanding of the relationship between student-teachers’ beliefs and their impact on educational innovations and reform.

Educational reforms must take teachers’ beliefs into account, if the aim is to bring about overall and sustainable change in the teacher’s classroom practice and students’ learning. Educational innovation is doomed to failure if it does not give any weight to teachers’ beliefs, intentions, and attitudes (Betoret & Artiga, 2004; Chan & Elliot, 2004; Trigwell et al., 1994) as beliefs act as filters through which all relevant learning and information used to prepare teachers to act in the classroom is influenced (Brown et al., 2009; López-Íñiguez & Pozo, 2014; Wong et al., 2006; Zanting et al., 2001). Thus, teacher beliefs, as argued by Cheng et al. (2015), should be the focus of change if teacher education programs are to prepare teachers to teach in a more constructive manner. Recent empirical studies have documented a relationship between teachers’ beliefs about teaching and learning and classroom practice (Canbay & Beceren, 2012; Chan & Elliot, 2004; Feixas & Euler, 2013; Gilakjani, 2012)

Hence, it is important for teacher educators to examine pre-service teachers’ beliefs and modifications of these beliefs during teacher preparation programs. This need has promoted the
publication of several study surveys on pre-service teachers’ beliefs about teaching and learning. Many of these studies, however, are isolated surveys conducted in Western countries without follow-up on the changes in beliefs. Thus, this study was intended to examine the changes of pre-service teachers’ entry behaviors, i.e., teaching approach preference and conceptions of teaching and learning over a 10 month-long teacher education program. To this end, the following research questions were raised;

(1) What conceptions of teaching and learning do preservice teachers hold when they joined the teacher education program?
(2) What teaching approach do these preservice teachers prefer when they joined the teacher education program?
(3) Does preservice teachers’ conceptions of teaching and learning related to their teaching approach preference?
(4) Do the preservice teachers show significant changes in their entry behaviors (i.e., teaching approach preferences and their conceptions of teaching and learning) at the end of the teacher education program?

2. Conceptual framework

2.1. Beliefs about teaching and learning

Beliefs are always accepted as true by the individual and are “imbued with emotive commitment” (Borg, 2001) serving further as a guide to thought and behavior. Pajares (1992) and Nespor (1987) maintain that beliefs are far more influential than knowledge in “determining how individuals organise and define problems and are stronger predictors of behaviour.” Studies of teacher beliefs revealed that teachers have beliefs about all aspects of their work. OECD [The Organization for Economic Cooperation and Development] (2009) argues that there are five main areas in which teachers have been found to hold significant beliefs—beliefs about learners and learning, teaching, subjects or curriculum, learning to teach, and about the self and the nature of teaching. This argument is reflected in Richards (1996) work on teachers’ beliefs, which he maintains are a set of rational principles that function as “rules for best behaviour” that develop as teachers’ belief systems.

Richards (1996) maintains that beliefs are the outcomes of teachers’ evolving theories of teaching which reflect teachers’ individual philosophies of teaching, developed from their experience of teaching and learning, their teacher education experiences, and from their own personal beliefs and value systems. Similarly, OECD [The Organization for Economic Cooperation and Development] (2009) stated that teachers’ beliefs of teaching and learning are very strongly influenced by national school systems, culture, and pedagogical traditions. Moreover, Nespor (1987) noted that beliefs are formed early in life as a result of a person’s education and experience and strong beliefs about learning and teaching are well established by the time a student completes schooling. Strengthening this, Pajares (1992) indicated that beliefs about teaching are well established by the time students get to college. They include ideas about what it takes to be an effective teacher and how students ought to behave, and, though usually unarticulated and simplified, they are brought into teacher preparation programs (Richards, 1996).

Conceptions of teaching and learning, generally, can be seen as the beliefs about teaching that guide a teacher’s perception of a situation and will shape actions. Approaches to teaching, on the other hand, are the way beliefs are put into practice (Lam & Kember, 2006). Chan and Elliot (2004) explained that the conceptions about teaching and learning refer to the beliefs held by teachers about their preferred ways of teaching and learning. These include the meaning of teaching and learning and the roles of teacher and learners.
There are disagreements among scholars in some important aspects such as the way to categorize the teaching and learning conceptions held by teachers (Betoret & Artiga, 2004). These divergences, Betoret and Artiga continue arguing, have hindered the rate at which researches have been conducted in this field and this has recently led some authors to carry out exhaustive reviews of the work published over the past few years in order to search for meeting points that enable research to continue advancing. The studies by Kember (1997) and Samuelowicz and Bain (2001), for instance, showed that when it comes to categorizing the conceptions held by teachers, authors disagree on two fundamental issues. The first involves how to determine the number of categories that exist and establish their boundaries, while the second concerns deciding whether the conceptions about teaching and learning are to be studied separately or jointly as an integrated whole. However, studies (e.g., Gow & Kember, 1993; Kember, 1997; Boulton-Lewis et al., 2001) that investigated teachers’ beliefs about teaching and learning separately and later analyzed them to determine the extent to which they coincide confirmed that there was no statistically significant difference between the two variables. On the basis of these researches and the researchers’ understanding of teaching and learning as two interrelated processes that cannot be separated when seeking to gain an overall view of the educational situation, this study investigated student-teachers’ conceptions of teaching and learning in an integrated manner. In this study, the term “beliefs” and “conceptions” are used interchangeably.

On the other hand, authors who have studied teachers’ conceptions of teaching and learning have used the major educational approaches or paradigms in an attempt to identify and categorize them within a continuum (Samuelowicz & Bain, 1992; Gow & Kember, 1993; Prosser et al., 1994; Kember, 1997). Comparing the categories produced in the different studies, a general trend is observed that conceptions of teaching and learning range from conceptions concerned with the transmission of information to those concerned with the facilitation of understanding in students (Kember, 1997; Prosser et al., 1994; Samuelowicz & Bain, 1992). Although the precise numbers and descriptions of intermediate categories vary between studies, overall there is a high degree of similarity (Ho et al., 2001). Having this in mind, this study used the traditional Vs constructivist categories which are commonly used in recent studies (Chan & Elliot, 2004; Cheng et al., 2015; Entwistle et al., 2000; Kember, 1997; Kember & Kwan, 2000). The constructivist conception is about teaching as facilitating students’ learning and learning as knowledge construction, while the traditional conception concerns teaching as transmission of knowledge and learning as absorbing the transmitted information.

Student-teachers join teacher education programs with their own ideas and conceptions about what it takes to be a successful teacher. These conceptions are a product of their upbringing, a reflection of their life experiences, or a result of socialization processes in schools (Kaufman, 1996; Richardson, 1997; Wong et al., 2006; Zanting et al., 2001). Likewise, Nespor (1987) contends that entrants come to pre-service teacher training programs with a set of deep-seated beliefs about the nature of teaching based on their own experiences as students. Moreover, Hewson and Hewson (1987) contend that prospective teachers’ conceptions of teaching are reflective of their K-12 learning experiences which in turn impact their learning of pedagogy (Cheng et al., 2009). These conceptions reflect the ways in which they intend to behave and interact with students, how they judge theories of student learning, organise, and manage classrooms effectively, and behave professionally (Nespor, 1987; Subramaniam, 2014; Tillema, 1998).

As noted by different researchers (e.g., Anderson & Piazza, 1996; Gill et al., 2004; Handal & Herrington, 2003; Yung et al., 2007), most preservice teachers have behaviorist/traditional conception of teaching and learning. Student-teachers bring with them mature beliefs about teaching and learning that tend to be more congruent with their past experiences than with the views we are asking them to consider’ (Guilfoyle et al. as cited in Swennen et al., 2009). In addition, Gill et al. (2004) stated that many student-teachers view knowledge as certain. They believe their job is to transmit this knowledge directly to their students. They believe that the role of the teacher is to
convey “right answers” to his/her students. Thus, according to Prawat (1992), many teachers adopt a “transmission” approach to teaching and an “absorptionist,” passive view of learning which is less likely to promote student understanding and intrinsic motivation. That is why scholars in the field of teacher education (e.g., Deng, 2004; Marouchou, 2011; Prawat, 1992) keep arguing that beliefs should be the focus of change if teacher education programs are to prepare teachers to teach in a more constructivist manner. A constructivist view of teaching and learning sees learning as a process of knowledge construction, and the teacher’s role as a facilitator of such learning. In order for teachers to play this role, they may need to change their views of the nature of teaching and learning (Trigwell & Prosser, 1996).

2.2. Approaches to teaching

Teaching approaches, as described by Trigwell and Prosser (1996), are those enduring personal qualities and behaviors that appear in how educators conduct their classes. Conti (2007) defines the term teaching approach as the distinct qualities exhibited by a teacher that are consistent from situation to situation regardless of the content being taught. Strengthening Conti’s notion, Elliott as cited in Ahmed (2013) explained that teaching approach is made up of a range of behaviors that a teacher comfortably used consistently over time, situation, and content.

A majority of researchers distinguished between a teacher-centered/traditional and a student-centered/constructivist approach to teaching (Kemner & Kwan, 2000; Lindblom-Ylänne et al., 2006; Samuelowicz & Bain, 2001; Trigwell & Prosser, 1996; Vermunt & Verloop, 1999). Traditional teaching approach is direct instructional strategy by which the teacher is the major provider of information and his/her role is to pass facts, rules, or action sequence in the most straightforward way, this usually takes the form of lecture consisting of explanation and examples (Frazel, 1995; ICDR [Institute of Curriculum and Development Review], 1994; Postareff & Lindblom-Yla, 2008). This approach gives the priority role and responsibility to the teacher. On the other hand, constructivist teaching approach focus on providing a learning environment where students are involved in higher order thinking (analysis, synthesis, and evaluation); they are engaged in activities like reading, discussion, writing, and greater emphasis is placed on students’ exploration of their own attitudes and values (Bonwell & Eison, 1991).

It is widely accepted that teachers’ conception of teaching and learning shapes their instructional decisions in the classrooms (Canbay & Beceren, 2012; Chan, 2004; Chan & Elliot, 2004; Devlin, 2006; Feixas & Euler, 2013; Garrison & Neiman, 2003; Gilakjani, 2012; Nesper, 1987; OECD [The Organization for Economic Cooperation and Development], 2009; Trigwell & Prosser, 1996; Yilmaz & Çavuş, 2008). In other words, there is a relationship between teachers’ conception of teaching and learning and their propensity toward adopting specific instructional practices. Gilakjani (2012) further elaborates that how teachers choose their teaching strategies and implement techniques is a function of their conception of teaching and learning. According to Canbay and Beceren (2012), teachers whose conception of teaching is as a transmission of knowledge were observed using teacher-centered approaches in their teaching whereas instructors perceiving good teaching as a facilitative act integrated more learner-centered approaches into their teaching. Similarly, Chai (2010) reported that teachers with teacher-centered conception of teaching tend to adopt didactic teaching practices such as lecturing whereas teachers with student-centered conception of teaching and learning tend to adopt constructivist teaching practices.

2.3. Change in conceptions of teaching and learning

There is an agreement among scholars in that an effective implementation of a constructivist teacher education program bring about change on student-teachers’ conception of teaching and learning (Kaufman, 1996; Richardson, 2003.). Previous studies conducted on the effectiveness of constructivist teacher education in bringing about conceptual changes (change in beliefs) on student-teachers, however, suggested that the impact of teacher education in practice seems to be insignificant unless teacher-educators practically models constructivist ways of teaching.
For instance, (e.g., Loughran, 2006; Loughran & Berry, 2005, 2005; Lunenberg et al., 2007; Martell, 2014; Ray, 2002; Swennen et al., 2008) have confirmed that a teacher education program in which teacher-educators actually used constructivist teaching methods in their classroom is more likely to influence student-teachers’ traditional beliefs. In contrast, teacher education programs that merely teaches learning theories and concepts is unlikely to have an effect in changing student-teachers’ traditional beliefs and instructional practices (Kagan, 1992). Similarly, Struyven et al. (2010) also explained that constructivist learning environment push student-teachers’ approaches to teaching toward student-centered approaches and away from information transmission/teacher-focused approaches to teaching. Belief systems are dynamic mental structures that are susceptible to change by practical experiences (Mujis & Reynolds, 2002).

3. Methods and materials

This study was intended to examine the change in student-teachers’ conceptions of teaching and learning and their teaching approach preference. A one group pretest-posttest design was employed to answer the basic research questions raised. Because of practical reasons such as budget, time and geographic dispersion of the universities, it was difficult to include all universities in this study. When factors like expense, time, and accessibility that make acquiring data from the whole population is impossible, Cohen et al. (2007) suggest researchers to take smaller group of the total population. Taking Cohen et al.’s suggestions into account, two universities namely Bahir Dar and Haramaya were selected using convenience sampling methods.

Student-teachers (pre-service) admitted to Post Graduate Diploma in Teaching (PGDT) program in the two universities in the 2016/2017 academic year were population of the study. In determining the sample size, the researcher used the rule of thumb principle of sampling. According to different scholars in the field of social science researches (e.g., Janet, 2005; Lawrence, 2007; Schreiber & Asner-Self, 2011), in a smaller population (under 1000), taking 30% of the total populations as a sample is considered as representative, 10% for moderately larger population (10,000), and 1% for large population (over 150,000). Accordingly, of the total of 900 student-teachers (500 in Bahir Dar and 400 in Haramaya University) admitted to PGDT program, 150 (one hundred fifty) and 120 (one hundred twenty) student-teachers were taken randomly from Bahir Dar and Haramaya University respectively. However, in order to increase the response/return rate of questionnaires, fifty (50) more participants were selected which grows the total participants to 320 (three hundred twenty).

A pre-test in the form of inventories (questionnaires) were administered on the first week of the student-teachers’ arrival in the universities. The purpose of this pre-test was to know the student-teachers’ entry characteristics, i.e., approaches to learning and teaching approach preference as they join Post Graduate Diploma in Teaching (PGDT) program. As the PGDT program lasts for about ten months, the post-test was conducted at the end of the PGDT program (as they return back to university after practicum-field teaching). The post-test was intended for examining whether student-teachers modified and/or change their entry characteristics. In the pre-test, of the 320 questionnaires distributed, 293 (91.6%) of the questionnaires were returned fully completed while the rest 27 were incomplete and discarded. In the post-test, however, the number of students participated has declined to 254 (86.7% return rate). Thirty-nine students have dropped out of the study and/or the PGDT program for different reasons. In both cases the return rate was in excess of the requirement to conduct statistical analysis and conclude from the results.

Conception of Teaching and Learning Questionnaire (CTLQ) developed by Chan and Elliot (2004) and Approaches to Teaching Inventory (ATI) developed by Trigwell and Prosser (2004) were employed. The conception for teaching and learning questionnaire was a two-factor 30 items questionnaire in which the first 18 items measures traditional conception whereas the remaining 12 items measures constructivist conception. The scaling of this instrument was a Likert-type with (5 = Strongly Agree—1 = Strongly Disagree). Exemplary items measuring the traditional conception of teaching and learning include statements such as: “Teachers should have control over what
students do all the time”; “The major role of a teacher is to transmit knowledge to students”; and “Teaching is simply telling, presenting or explaining the subject matter”. On the other hand, items addressing the constructivist conceptions of teaching and learning are the following: “Effective teaching encourages more discussion and hands-on activities for students”; “The focus of teaching is to help students construct knowledge from their learning experience instead of knowledge communication”; and “Learning means students have ample opportunities to explore, discuss and express their ideas”.

The approaches to teaching inventory contains 22 statements with responses based on a Likert scale of 1–5 (1 = “only rarely” to 5 = “almost always”). There are two 11 item subscales within the ATI. The first subscale represented the traditional/teacher-centered approach and the second subscale is the constructivist/student-centered scale. Exemplary items measuring the traditional teacher-centered approach to teaching, include statements such as: “In the subject I am teaching, students should focus their study on what I provide to them”; “It is important to present a lot of facts to students so that they know what they have to learn for the subject”; and “In the subject I am teaching, I will provide students with the information they will need to pass the formal assessment”. On the other hand, items addressing the constructivist teaching approach are the following: “In the subject I am teaching, it is better for students to generate their own notes rather than copy mine”; “In the subject I am teaching, I will give opportunities for students to discuss their changing understanding of the subject”; and “I understand teaching as helping students develop new ways of thinking”.

To check reliability of the instruments, pilot test was conducted. The result indicated the instrument (ATI) as reliable with Cronbach reliability coefficient for the whole instrument was .72, while sub-scale reliabilities were .74 for traditional and .71 for constructivist. Similarly, the CLTQ was found to be reliable with Cronbach reliability coefficient for the whole instrument was .74, whereas the sub-scales reliabilities were .81 for traditional and .73 for the constructivist items. The data were analyzed using means, standard deviations, paired and independent t-test, and Pearson correlation coefficient. The actual data was collected from the participants during the first week of the year-long training (PGDT program). The data collected were analyzed using means, t-test, and Pearson correlation coefficients.

3.1 Context of the study

Following the implementation of a new education and training policy that call for student-centered teaching approach at all levels, ministry of education has adopted a framework of strategies and launched the Teacher Education System Overhaul (TESO) in 2003. It was intended to bring about paradigm shift in the Ethiopian teacher education system. The paradigm shift, as mentioned in the TESO document, involves (a) teaching which makes change in ideas and directly in pupils life (b) taking the real world in to the classroom and taking teachers out into the real world (c) democratizing teacher education giving teachers, students, and citizens confidence to make decisions and take initiatives, to take control of their world. In other words, it calls for a shift from teacher-centered to a student-centered approach (Ahmed, 2013; Derebssa, 2006; Semela, 2014; Temechegn, 2006).

The policy document (TESO) sets up implementation strategies, among which one is a change in the structure and content of the curriculum. A major change includes reduction in duration of pre-service secondary teacher education from four years to three. Content wise, TESO has suggested a curriculum for the three-year degree program that allocates 30–32 credit hours for majors, 18 hours for minor ones, 35 hours for professional courses, and 25 hours for practicum. New courses such as action research, civics and ethics, English communication skills and Information and communication technology are included. Methodologically, TESO has emphasized active learning strategies such as problem solving, inquiry, and practical activities that invite students for more participation.
However, after six years of actual implementation, it came as no surprise for most observers, including teacher-educators and practitioners that the landmark reform which was believed to represent a paradigm shift was indeed suffering from a number of drawbacks. Researchers have reported that implementation of student-centered teaching approach continued as challenge in Ethiopian schools (Derebssa, 2006; UNICEF, 2010). According to these and other authors, the deep-rooted Ethiopian tradition of using the lecture method, as well as a lack of institutional support and a lack of content knowledge on the part of many teachers have constrained teachers from applying this type of teaching. Teachers and teacher educators have continued to employ purely didactic methods rather than the new active learning approach as promoted in the education and training policy and TESO.

Interestingly though, the reasons forwarded to side-line TESO were almost the same old justifications advanced to legitimize the same. As usual, the weaknesses of TESO were expressed in terms of teachers’ “poor” attributes—inadequate subject-matter knowledge, failure to apply/implement student-centered/active learning methods, lack of interest to follow up and support students etc (MOE [Ministry of Education], 2009a). Thus, MoE sought for another new remedy that would replace TESO and bring about the desired changes on teachers in general and students learning in particular.

Accordingly, MoE has initiated reforms in the structure and content of secondary teacher education program (MOE [Ministry of Education], 2009b). The major structural reform made on teacher education that might be new in its kind was a change in model of teacher education. The concurrent teacher education models in which both subject matter and professional courses (methodology and teaching practice) are offered concurrently is replaced by consecutive model sometimes called end-on model in which students are prepared academically first in their subject area in which they would have had a degree and then enroll for professional training later. The professional qualification that students would get later is known as Post Graduate Diploma in Teaching (PGDT).

The consecutive model of teacher education is the one that involves the recipients to have had a bachelor degree (BA, BSC, etc) in a subject discipline (e.g., Amharic, History, Chemistry, Physics, etc) and then later enroll for a postgraduate diploma (PGDT) in teaching. That is, a teacher first obtains a qualification (usually a University degree), and then, follows up for a further period to gain additional qualification in teaching, to ensure certification as a qualified teacher. This model is now in place since 2011. The main objectives of introducing this model of teacher education, as stated in the framework, is to fill the content and pedagogical gaps that were persistent in earlier secondary education teaching programs as observed in teaching and classroom practices in secondary schools (MOE [Ministry of Education], 2009b). On the other hand, similar to the previous model, this model is founded on the fundamental assumptions and principles of constructivism.

4. Results
This study was intended to examine the change in pre-service secondary teachers’ conceptions of teaching and learning and their teaching approaches preference. The data collected through questionnaires before and after the completion of the PGDT program were analyzed and the results are presented under.

4.1. Preservice teachers’ entry behavior
As shown in Table 1 most student teachers in the sample analyzed possess traditional beliefs of teaching and learning. This was evidenced by the fact that the grand mean score obtained in the traditional conception (M = 3.47, SD = .29) was higher than constructivist conception (M = 2.08 and SD = .22) categories. In addition, the paired sample T-test result (t (293) = 47.819, df = 292, p < 0.05) confirmed that the student-teachers had significantly stronger espousal of the traditional conception than the constructivist. In other words, for instance, student-teachers believed that learning occurs primarily through drill and practice and it mainly involves absorbing as much information as possible; teaching is simply telling, presenting, or explaining the subject matter; and the major role of a teacher is to transmit knowledge to students.
Table 1. Student-teachers’ conceptions of teaching and learning (pre-test)

| Conceptions  | Mean | SD  | df  | T statistics | P value |
|--------------|------|-----|-----|--------------|---------|
| Traditional  | 3.47 | .29 | 292 | 47.819       | .000    |
| Constructivist | 2.08 | .22 |     |              |         |

p < 0.05

Table 2. Student-teachers’ teaching approach preference (pretest)

| Teaching approach | Mean | SD  | df  | T statistics | P value |
|-------------------|------|-----|-----|--------------|---------|
| Traditional       | 3.55 | .27 | 292 | 50.197       | .000    |
| Constructivist    | 1.96 | .29 |     |              |         |

p < 0.05

Table 3. The relationship between student-teachers’ conceptions of teaching and learning and their teaching approach preference

| Conceptions          | Teaching approach |
|----------------------|-------------------|
|                      | Traditional      | Constructivist   |
| Traditional conceptions | .86*             | −.74*            |
| Constructivist conceptions | −.73*            | .67*             |

* Correlation is significant at the 0.01 level (2 tailed)

The study had also tried to identify student-teachers’ teaching approach preferences. Accordingly, the data collected on this regard revealed that the student teachers prefer traditional teaching approach (M = 3.55, SD = .27) over constructivist (M = 1.96, SD = .29). Moreover, as can be seen from Table 2, the result of the paired sample T-test demonstrated that there a significant difference between traditional and constructivist teaching approach preference [t (293) = 50.197, df = 292, p < 0.05]. This implies that student-teachers prefer, as a teacher in the future, to focus on good presentation of more information to students and help them pass the formal assessment items.

The relationship between conceptions of teaching & learning and the teaching approach preference of student-teachers was also investigated using Pearson product-moment correlation coefficient. Accordingly, the data, as can be seen from Table 3, revealed that there is relationship between likely beliefs and practice. The student-teachers’ conceptions of teaching and learning was found to be positively correlated with their teaching approach preference, r = .86, n = 293, p < .01, with high mean score of traditional conceptions associated with higher mean scores of traditional teaching approach preference.

4.2. Preservice teachers’ (post-test result)

Here, the data collected at the end of the teacher education program is analyzed. It is meant for checking whether the preservice teachers’ entry behaviors have shown changes as a result of going through the 10-month-long teacher education program.

As the Table above indicated, the student-teachers showed no significant changes in their views of teaching and learning [t (254) = −.344, df = 253, p > .05]. They maintained their traditional beliefs. The student-teachers’ tended to hold the traditional beliefs they brought to the PGDT
Table 4. Paired sample t-test result of student-teachers’ conceptions of teaching and learning (pre and posttest comparison)

| Conceptions | n  | M    | SD | df | t   | Sig. |
|-------------|----|------|----|----|-----|------|
| Traditional | Pretest | 254 | 3.45 | .30 | 253 | -3.44 | .731 |
|             | Posttest | 254 | 3.48 | .2  | 253 | -3.44 | .731 |
| Constructivist | Pretest | 254 | 2.11 | .22 | 253 | 2.741 | .007* |
|              | Posttest | 254 | 2.03 | .24 | 253 | .007* |

p > 0.05; *p < 0.05

Table 5. Paired sample t-test result of student-teachers’ teaching approach preference (Pre and post test comparison)

| Teaching | n  | M    | SD | df | t   | Sig. |
|----------|----|------|----|----|-----|------|
| Traditional | Pretest | 254 | 3.55 | .28 | 253 | 1.698 | .091 |
|           | Posttest | 254 | 3.52 | .23 | 253 | 1.698 | .091 |
| Constructivist | Pretest | 254 | 1.94 | .29 | 253 | 2.651 | .009* |
|           | Posttest | 254 | 1.88 | .30 | 253 | .009* |

p > 0.05; *p < 0.05

program. Moreover, their constructivist view of teaching and learning has decreased significantly [t (254) = 2.74, df = 253, and p < .05].

As indicated in Table 4, 5 the student-teachers did not demonstrate statistically significant changes in their teaching approach preference in the post-test. The paired sample t-test [t (254) = 1.698, df = 253, and p > 0.05] result showed that the student-teachers’ preferred traditional teaching approach even after attending the program. This implies that the student-teachers have shown their commitment to the already established teaching approach preference. The data also provides evidence of a significant decrement in constructivist teaching approach's mean scores [t (254) = 2.651, df = 253, and p < .05].

5. Discussions

As it is well discussed in the literatures above, the well-established beliefs which preservice student-teachers bring to their teacher preparation influence what they are able to learn. They serve as filters for making sense of the knowledge and experiences they encounter. They may also function as a barrier to change by limiting the ideas that teacher education students are able and willing to entertain. These taken-for-granted beliefs may mislead prospective teachers into thinking that they knew more about teaching than they actually do and make it harder for them to form new ideas and new habits of thought and action.

The pre-test data revealed that the student-teachers have joined the PGDT program with traditional conceptions of teaching and learning. As the student teachers were mostly brought up in a didactic teaching environment, the didactic image of teaching and learning has become deeply rooted in their minds. The result of the study is parallel with previous studies (e.g., Alger, 2009; Chai et al., 2009; Gill et al., 2004; Handal & Herrington, 2003; Leavy et al., 2007; Yung et al., 2007) which have reported that student-teachers came into the profession with behaviorist/teacher-centered conceptions of teaching. In an action research-based study by Leavy et al. (2007) in USA and Ireland, for instance, preservice teachers reported predominantly behaviorist beliefs of teaching and learning at their entry to teacher education program. Similarly, a study conducted in Singapore by Chai et al. (2009) also revealed that student teachers, before the training, reported traditional conception of teaching and learning.
In contrary, other studies (e.g., Aldrich & Thomas, 2005; Cheng et al., 2009; Coskun & Grainger, 2014; Eren, 2010) found out that student-teachers have tendencies toward constructivist views of teaching and learning. For instance, a study conducted by Eren (2010) with a sample of 304 prospective teachers showed that the prospective teachers had constructivist conception of teaching and learning.

The reason for such inconsistency is that beliefs in student-teachers are mainly a construct resulting from their previous experiences in K-12 schooling and quite possibly in university. As explained by different scholars (e.g., Battista, 1994; Hewson & Hewson, 1987; Loughran, 2010), student-teachers bring with them mature beliefs about teaching and learning that tend to be more congruent with their past experiences than with the views we are asking them to consider. In other words, a student-teacher who have gone through traditional teaching practice at lower education level tend to consider the teacher as source of knowledge and believe that his/her role is to convey information to his/her students. On the other hand, a student-teacher whose lower grade level schooling is student-centered tend to view learning as meaning making and student’s own responsibility and teaching as helping students construct knowledge by themselves.

Taking the above argument into account, accordingly, the finding of this study is not surprising, i.e., the student-teachers’ inclination towards traditional view of teaching and learning is due to their past educational experience. The student-teachers participated in this study have attended schools in which direct instruction and examination dominated the learning environment; where the emphasis was on the efficient transfer of knowledge to students and the replication of basic skills. These student-teachers are both educated and socialized by traditional teaching approaches they witnessed over the thousands of hours they spent as learners in lower grade levels. Moreover, these student-teachers have experienced academic success in learning environments that were teacher-centered and relied heavily on lecture, thus, it is obvious that the way they view teaching and learning, at least initially, is consistent with behaviorist perspectives. Moreover, the study revealed that there is no statistically significant difference in conception of teaching and learning and teaching approach preference between the student-teachers in the two Universities. This indicates that the student-teachers have gone through similar learning environment which strengthen the above argument.

Regarding their preferred teaching approach, the student-teachers favored traditional teaching approach over constructivist approach, and there was no significant difference of teaching approaches preference between student-teachers in the two Universities. On the other hand, significant correlations were found between the student-teachers’ conceptions of teaching & learning and their teaching approach preferences, i.e., positive and significant relationship between the traditional conceptions of teaching and learning and the traditional teaching approach. In this regard, the result of this study was also found to be in agreement with previous studies (e.g., Devlin, 2006; Feixas & Euler, 2013; Gilakjani, 2012; Trigwell & Prosser, 1996; Yılmaz & Çavaş, 2008). Choi (2010) & Trigwell and Prosser (1996), for instance, reported that student-teachers with teacher-centered conception of teaching tend to report a preference towards traditional teaching practices. Moreover, as teaching behavior is frequently shaped by prior educational experiences, it is unrealistic to expect these preservice teachers to report a preference to constructivist teaching approach. Their prior educational experiences were not constructivist-based experiences. To put it differently, the traditional didactic schooling experience which these pre-service secondary teachers have gone through shaped them to prefer what they are familiar with.

As these traditional conceptions of teaching and learning and a preference towards teacher-centered teaching approach were an entry behavior of the student-teachers, the constructivist-based PGDT program have been expected to challenge them and bring about conceptual change which would have been translated into constructive teaching approach preference. However, the posttest data have shown the unexpected one. The end-of-program evaluation demonstrated that
there is no statistically significant difference between the pretest and posttest results. The student-teachers involved in this study were not yet reformed rather show their commitment to beliefs they developed before joining the PGDT program. To say it differently, the student-teachers in the study still hold on to traditional beliefs such as perceiving the teachers’ role as guiding students to arrive at the answers they expected, and the students’ role as rehearsing information and performing well in examination.

This might be attributed partly to the learning environment to which they were exposed in the PGDT program. In other words, the learning environment that the teacher-educators created might be more of teacher-centered that confirms their preset beliefs. Supporting this argument, Kaufman (1996) has underlined that student-teachers have to be exposed to constructivist learning environment in order to construct or reconstruct their conception about teaching and learning. Strengthening this, previous studies (e.g., Applefield et al., 2001; Battista, 1994; Darling-Hammond, 2006; Holt-Reynolds, 1992; Russell, 2005; Struyven et al., 2010; Yerrick & Hoving, 2003) have reported that student-teachers educated by means of lectures fail to adopt the techniques that have been advocated rather it strengthened the student-teachers’ existing traditional belief of teaching and learning and carry out their instructional practices in support of their beliefs. Yerrick and Hoving (2003) identified such student-teachers as “reproducers” who continued to hold traditional views of teaching and learning and prefer to teach as they had been taught. Hancock and Mueller (2005) have concluded that teacher educator’s actual classroom practice reinforces or challenges the preexisting beliefs held by student teachers.

A study conducted by Alger (2009) found out that there was a reduction in traditional beliefs and an increase in constructivist one at the end of the program. The study reported that over 63% of student teachers changed their conception from traditional to constructivist over time. Similarly, a recent study conducted on 297 primary school student-teachers by Bay et al. (2015) revealed that they showed constructivist conception in the last year of their education. Moreover, a study conducted in Singapore by Chai et al. (2009) revealed that student-teachers whose conceptions of teaching and learning were traditional have shown significant change after completing a year-long training. They seem to believe more in constructivist. In this study, it was found that as the student teachers progressed towards their senior year, their scores on the traditional conception were decreased.

There is a strong tendency among student-teachers to maintain the status quo unless teacher-educators offer learning experiences that challenge student-teachers’ preexisting thinking; offer opportunities to try new practices; and model the kind of teaching they are trying to promote. It is only through extensive questioning, reflecting, and constructing, according to Fosnot and Perry (2005), that the constructivist paradigm shift in education will ever take root in teacher preparation efforts. Therefore, it is possibly safe to conclude that student-teachers would have changed their traditional beliefs and adopt constructivist instructional strategies if they themselves had participated in constructivist learning activities and/or observe constructivist instructional strategies modeled by their teacher-educators.

6. Conclusion and implications
Despite the fiscal provisions, the success of educational reforms are partly determined by the belief system that the teachers hold about teaching and learning, thus, identifying student-teachers’ entry beliefs about teaching and learning would have paramount importance as it informs the teacher-educator and policy designers about the specific area that the teacher education program should target on and the means through which the target could be achieved. In this regard, the result of this study indicated that the student-teacher have joined teacher education program with traditional beliefs of teaching and learning. Furthermore, they tend to prefer traditional teacher-centered teaching approach which is consistent with their conceptions of teaching and learning. This result seems to support the conclusion that teachers’ beliefs about teaching shape their
instructional decisions in the classroom. Therefore, the implications of this study would be threefold.

First, as these findings witnessed student-teachers join teacher education with traditional beliefs, the teacher education program should target on influencing the deep-seated beliefs of these student-teachers meaning student teachers need to be exposed to a constructivist learning environment that challenge and deconstruct the existing beliefs. In other words, the pedagogical approaches should take the student-teachers’ belief into account and aim at changing these beliefs as a pre-requisite for implementing the reforms in Ethiopia.

In doing so, the first and foremost remedy through which constructivism takes root, as underlined by several scholars in the field of teacher education (e.g., Andrew, 2007; Darling-Hammond et al., 2005; Hogg & Yates, 2013; Loughran, 1996, 2010; Richardson, 2010; Wang, 2002), is that the teacher-educator should model the kind of interactive teaching they are preaching and to create opportunities for student-teachers to experience it as learners. If student-teachers see constructivist teaching strategies modeled within their own classrooms, they will be more comfortable with constructivist-based teaching principles and more likely to use them in their future classrooms (Andrew, 2007; Loughran, 2006). It seemed to be not enough to teach, Martell (2014) and Loughran (1996) argue, student-teachers how to make a lesson active and interactive instead they require actual experience of such lessons. In other words, if student-teachers are to adopt constructivist teaching in the future, they need to continually be given opportunities to view it in action. Not only that, such exposition to constructivist teaching need to be in ways that allow it to be observed and understood across a range of local teaching and learning contexts and in a number of observable forms.

Teacher-educators should provide student-teachers with opportunities to link theory and practice; develop skills and strategies; and cultivate habits of analysis and reflection. This could be done, for instance, through focused observation, and analysis of cases, micro teaching, and other laboratory experiences (Feiman-Nemser, 2001; Loughran, 1996). Student-teachers should also be asked to observe or recall different instructional experiences and actively reflect on their learning and critically think through the problems and issues related to these different instructional approaches. In this way, they are more likely to rethink traditional didactic approaches as they obtain first-hand knowledge of how constructivist instructional approaches are applied. Series of micro-lessons are means of exposing student-teachers to constructivist learning theories and environments and make them reflect upon their prior experiences as students (Lim & Chan, 2007).

Second, in the current nine months-long PGDT program, student-teachers are exposed to intensive course comprising a substantial amount of knowledge. The teaching practice, as stated in the program framework, involves 10 weeks in which the teacher-educator and cooperating-teachers observe two and ten sessions, respectively. The duration of the teaching practice is far away below the recommended 30 weeks which Darling-Hammond et al. (2005) identified as a feature for best practice in teacher education. Justifying the importance of relatively extended teaching practice, Kagan (1992) & Beck and Kosnik (2006) have suggested that extensive field experiences are essential for student-teachers to test their pedagogical beliefs and reflect upon their successful and unsuccessful instructional practices. Thus, besides creating constructivist-oriented learning environment in the teacher education program, student-teachers’ shall be trained for extended period of time. This would, obviously, call for the replacement of the existing consecutive teacher education model with the concurrent one. The concurrent model would expose student-teachers to several aspects of practical experiences such as microteaching, peer teaching, and teaching practice for relatively longer periods, concurrent teacher education model would challenge student-teachers’ deep-seated beliefs.

Such extended duration of preparation and teaching practice would provide student-teachers with opportunities to have sufficient time to appreciate the diverse needs of learners and acquire
the skills to organize learner-centered activities. Because of the short duration of preparation, there is a tendency, on the teacher-educators side, to think “we must give them the theory”. There must be constant dialogue and co-learning, with extensive opportunity for the student-teachers to reflect, give input, and develop their own ideas. Student-teachers need strong support and a range of types of experiences as a basis for taking risks, developing innovative pedagogy, and giving personal meaning to what they are learning about teaching.

Alternatively, on the other hand, the two models could be implemented simultaneously which would allow comparison in terms of effectiveness to bring about the desired changes in our education system in general and student-teachers’ classroom practice in particular. Moreover, using both models simultaneously will also serve a function of evaluating whether the alternative programs attract more motivated and committed people to the teaching force. Finally, longitudinal studies that trace how teachers’ beliefs change as they enter into the profession can also offer valuable information for teacher professional development.

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References
Ahmed, K. (2013). Teacher-centered Versus learner – centered teaching style. The Journal of Global Business Management, 9(1), 22–34. http://www.jgmbm.org/page/3%20Ahmed%20Khale%20Ahmed.pdf
Aldrich, J., & Thomas, K. (2005). Evaluating constructivist beliefs of teacher candidates. Journal of Early Childhood Teacher Education, 25(4), 339–347. https://doi.org/10.1080/1090102050250408
Alger, C. (2009). ‘Secondary teachers’ conceptual metaphors of teaching and learning: Changes over the career span. Teaching and Teacher Education, 25(5), 743–751. https://doi.org/10.1016/j.tate.2008.10.004
Anderson, D., & Piazza, J. (1996). Changing beliefs: Teaching and learning mathematics in constructivist preservice classrooms. Action in Teacher Education, 18(2), 51–62. https://doi.org/10.1080/01626620.1996.10462833
Andrew, L. (2007). Comparison of teacher educators’ instructional methods with the constructivist ideal. Teacher Educator, 42(3), 157–184. https://doi.org/10.1080/08878730701555401
Applefield, J., Huber, R., & Moallem, M. (2001). Constructivism in theory and practice: Toward a better understanding. High School Journal, 84, 35–53.
Battista, M. (1994). Teacher beliefs and the reform movement of mathematics education. Phi Delta Kappan, 75(2), 462–470.
Bell, E., Vural, O., Demir, S., & Boşçe, B. (2015). An analysis of the candidate teachers’ beliefs related to knowledge, learning and teaching. International Education Studies, 8(6), 75–79. https://doi.org/10.5539/ies.v8n6p75
Beck, C., & Kosnik, C. (2005). Innovations in teacher education: A social constructivist approach. State University of New York Press.
Betoret, F., & Artigo, A. (2004). Trainee teachers’ conceptions of teaching and learning, classroom layout and exam design. Educational Studies, 30(6), 355–372. https://doi.org/10.1080/0305569042000310309
Bonwell, C., & Eison, J. A. (1991). Active learning: Creating excitement in the classroom. http://www.ntlf.com/html/lib/biblg-dig.html
Borg, M. (2001). Teachers’ beliefs. English Language Teaching Journal, 55(2), 186–187. https://doi.org/10.1093/elit/55.2.186
Borg, M. (2005). A case study of the development in pedagogic thinking of a pre-service teacher. Teaching English as a Second Language Electronic Journal, 9(2), 1–30.
Boulton-Lewis, G., Wilks, L., & Lewis, D. (2001). Changes in conceptions of learning for Indigenous Australian university students. British Journal of Educational Psychology, 71(2), 327–341. https://doi.org/10.1348/000709901158650
Brophy, J., & Good, T. (1986). Teacher behavior and student achievement. In M. C. Wittrock (Ed.), Handbook of research on teaching (pp. 328–375). MacMillan.
Brown, G., Lake, R., & Matters, G. (2009). Assessment policy and practice effects on New Zealand and Queensland teachers’ conceptions of teaching. Journal of Education for Teaching: International Research and Pedagogy, 35(1), 61–75. https://doi.org/10.1080/02607470802587152
Bryan, L. (2003). Nestededness of beliefs: Examining a prospective elementary teacher’s belief system about science teaching and learning. Journal of Research in Science Teaching, 40(9), 835–868. https://doi.org/10.1002/tea.10113
Conboy, O., & Beceren, S. (2012). Conceptions of teaching held by the instructors in English language teaching departments. Turkish Online Journal of Qualitative Inquiry, 3(3), 71–79. https://core.ac.uk/download/pdf/26184121.pdf
Chai, C. (2010). Teachers’ epistemical beliefs and their pedagogical beliefs: A qualitative case study among Singaporean teachers and the context of ICT-supported reforms. The Turkish Online Journal of Educational Technology, 9(4), 28–137. https://files.eric.ed.gov/fulltext/EJ908079.pdf
Chai, C., Yang, T., & Lee, C. (2009). The change in epistemological beliefs and beliefs about teaching and learning: A Study among pre-Service teachers. Asia-Pacific Journal of Teacher Education, 37(4), 351–362. https://doi.org/10.1080/13598660903250381
Chan, K. (2004). Preservice teachers’ epistemological beliefs and conceptions about teaching and learning: Cultural implications for research in teacher
education. *Australian Journal of Teacher Education, 29*(1), 1–10. https://doi.org/10.14221/ajte.2004v29n1.11

Chen, K., & Elliot, R. (2004). Relational analysis of personal epistemology and conceptions about teaching and learning. *Teaching and Teacher Education, 20*(8), 817–831. https://doi.org/10.1016/j.tate.2004.09.002

Chant, H. (2002). The impact of personal theorizing on beginning teaching: Experiences of three social studies teachers. *Theory & Research in Social Education, 30*(4), 516–540. https://doi.org/10.1080/00933104.2002.10473209

Cheng, A., Tang, S., & Cheng, M. (2015). Changing conceptions of teaching: A four-year learning journey for student teachers. *Teachers and Teaching, 22*(2), 177–197. https://doi.org/10.1080/13540602.2015.1055437

Cheng, M., Chan, K., Tang, S., & Cheng, A. (2009). Preservice teacher education students’ epistemological beliefs and their conceptions of teaching. *Teaching and Teacher Education, 25*(2), 319–327. https://doi.org/10.1016/j.tate.2008.09.018

Cohen, L., Marion, L., & Morrison, K. (2007). Research methods in education (6th ed.). Routledge.

Conti, G. (2007). Identifying your educational philosophy: Development of the philosophies held by instructors of lifelong-learners. *Journal of Adult Education, 30*(5), 19–34. https://eric.ed.gov/?id=EJ891062

Coskun, K., & Grainger, P. (2014). The effect of epistemological beliefs on teaching – Learning conceptions of pre-Service teachers of religion. *Global Journal of Teacher Education, 2*(3), 176–184. https://files.eric.ed.gov/fulltext/EJ1126076.pdf

Cross, D. (2009). Alignment, cohesion, and change: Examining mathematics teachers’ belief structures and their influence on instructional practices. *Journal of Mathematics Teacher Education, 12*(5), 325–346. https://doi.org/10.1007/s10857-009-9120-5

Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education, 57*(3), 1–15. https://doi.org/10.1177/0022487105285962

Darling-Hammond, L., Hammerness, K., Grossman, P., Rust, F., & Shulman, L. (2005). The design of teacher education programs. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world* (pp. 390–441). Jossey-Bass.

Deng, Z. (2004). Beyond teacher training: Singaporean teacher preparation in the era of new educational initiatives. *Teaching Education, 15*(2), 159–173. https://doi.org/10.1080/104762104200013593

Derbesss, D. (2006). Tension between traditional and modern teaching-learning approaches in Ethiopian primary schools. *Journal of International Cooperation in Education, 9*(1), 123–140. https://home.hiroshima-u.ac.jp/~pcie/epic/wp-content/uploads/2014/03/9-1-10.pdf

Devlin, M. (2006). Challenging accepted wisdom about the place of conceptions of teaching in University teaching improvement. *International Journal of Teaching and Learning in Higher Education, 18*(2), 112–119.

Entwistle, N., Skinner, D., Entwistle, D., & Orr, S. (2000). Conceptions and beliefs about “Good Teaching”: An integration of contrasting research areas. *Higher Education Research & Development, 19*(1), 5–26. https://doi.org/10.1080/07294360050020444

Eren, A. (2010). Consonance and dissonance between Turkish prospective teachers’ values and practices: Conceptions about teaching, learning, and assessment. *Australian Journal of Teacher Education, 35*(3), 27–45. https://doi.org/10.14221/ajte.2010v35n3.3

Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record, 103*(6), 1013–1055. https://doi.org/10.1111/1073-1742.00161

Feixas, M., & Euler, D. (2013). Academics as teachers: New approaches to teaching and learning and implications for professional development programmes. *International HETL Review, 2*(12). http://www.heltl.org/feature-articles/academics-as-teachers-new-approaches-to-teaching-and-learning

Fosnot, C. T., & Perry, S. R. (2005). Constructivism: A psychological theory of learning. In C. Fosnot (Ed.), *Constructivism: Theory, perspectives and practice* (2nd ed., pp. 8–33). Teachers College Press.

Frazel, M. B. (1995). Integrated teaching methods: Theory, classroom approach and field based connections. McGraw Hill Inc.

Garrison, J., & Neiman, A. (2003). Pragmatism and education. In N. Blake, P. Smeyers, R. Smith, & P. Standish (Eds.), *The Blackwell guide to the philosophy of education* (pp. 21–37). Blackwell Publishing Ltd.

Glikokiani, A. P. (2012). A match or mismatch between learning styles of the learners and teaching styles of the teachers. *International Journal of Modern Education and Computer Science, 4*(11), 51–60. https://doi.org/10.5815/ijmecs.2012.11.05

Gill, M., Ashton, P., & Alging, J. (2004). Changing preservice teachers’ epistemological beliefs about teaching and learning in mathematics: An intervention study. *Contemporary Educational Psychology, 29*(2), 164–185. https://doi.org/10.1016/j.cedpsych.2004.01.003

Gow, L., & Kempler, D. (1993). Conceptions of teaching and their relationship to student learning. *British Journal of Educational Psychology, 63*(1), 20–33. https://doi.org/10.1111/j.2044-8279.1993.tb01039.x

Hancock, R., & Mueller, R. (2005). Structural equation modeling: A first course. Erasmus University Medical Center.

Handal, B., & Herrington, A. (2003). Mathematics teachers’ beliefs and curriculum reform. *Mathematics Education Research Journal, 15*(1), 59–69. https://doi.org/10.1007/BF03217369

Hewson, P., & Hewson, M. (1987). Science teachers’ conceptions of teaching: Implications for teacher education. *International Journal of Science Education, 9*(4), 425–440. https://doi.org/10.1080/095069707090401

Ho, A., Watkins, D., & Kelly, M. (2001). The conceptual change approach to improving teaching and learning: An evaluation of a Hong Kong staff development programme. *Higher Education, 42*(2), 162–169. https://doi.org/10.1023/A:1017546218020

Hogg, L., & Yates, A. (2013). Walking the talk in initial teacher education: Making teacher educator modeling effective. *Studying Teacher Education, 9*(3), 311–328. https://doi.org/10.1080/17425564.2013.831757

Holt-Edwards, R. (1992). Personal history-based beliefs as relevant prior knowledge in course work. *American Educational Research Journal, 29*(2), 325–349. https://doi.org/10.3102/00219654029002325

ICDR [Institute of Curriculum and Development Review]. (1999). *Teacher education handbook*. Addis Ababa: Finfine Printing and Publishing.

Janet, R. (2005). Essentials of research methods: *A guide to social science research*. Blackwell Publishing.

Kagan, D. (1992). Implication of research on teacher belief. *Educational Psychologist, 27*(1), 65–90. doi:10.1207/s15326985ep2701_6

Kaufman, D. (1996). Constructivist-based experiential learning in teacher education. *Action in Teacher Education, 18*(2), 40–50. https://doi.org/10.1080/01626620.1996.10462832

Kember, D. (1997). A reconceptualization of the research into University academics’ conceptions of teaching.
Dejene, Cogent Education (2020), 7: 1833812
https://doi.org/10.1080/2331186X.2020.1833812

Learning and Instruction, 7(3), 255–275. DOI: 10.1016/S0926-6314(99)00028-X

Kember, D., & Kwan, K. (2000). Lecturers’ approaches to teaching and their relationship to conceptions of good teaching. Instructional Science, 28(5), 469–490. https://doi.org/10.1023/A:1026569608656

Koballa, T., Graber, W., Coleman, C., & Kemp, C. (2000). Prospective gymnasium teachers’ conceptions of chemistry learning and teaching. International Journal of Science Education, 22(2), 209–224. https://doi.org/10.1080/095006900289967

Lam, B., & Kember, D. (2006). The relationship between conceptions of teaching and approaches to teaching. Teachers and Teaching: Theory and Practice, 12(6), 693–713. https://doi.org/10.1080/13540600601029744

Lawrence, N. (2007). Basics of social research: Qualitative and quantitative approaches (2nd ed.). Pearson Education Inc.

Leavy, A., McSorley, F., & Bote, L. (2007). An examination of what metaphor construction reveals about the evolution of preservice teachers’ beliefs about teaching and learning. Teaching and Teacher Education, 23(7), 1217–1233. DOI: 10.1016/j.tate.2006.07.016

Lim, C. P., & Chan, B. C. (2007). MicroLESSONs in teacher education: Examining pre-service teachers’ pedagogical beliefs. Computers & Education, 48(3), 474–494. https://doi.org/10.1016/j.compedu.2005.03.005

Lindblom-Ylänne, S., Trigwell, K., Nevgi, A., & Ashwin, P. (2006). How approaches to teaching are affected by discipline and teaching context. Studies in Higher Education, 31(3), 285–298. https://doi.org/10.1080/03075070600680539

López-Iturrga, G., & Pozo, J. (2014). Like teacher, like student? Conceptions of children from traditional and constructivist teachers regarding the teaching and learning of string instruments. Cognition and Instruction, 32(3), 219–252. https://doi.org/10.1080/07370008.2014.918132

Loughran, J. (1996). Developing Reflective Practitioners: Learning about teaching and learning through modelling. Falmer Press.

Loughran, J. (2006). Developing a pedagogy of teacher education: Understanding teaching and learning about teaching. Routledge.

Loughran, J. (2010). What expert teachers do: Enhancing professional knowledge for classroom practice. Allen & Unwin.

Loughran, J., & Berry, A. (2005). Modelling by teacher educators. Teaching and Teacher Education, 21(2), 193–203. https://doi.org/10.1016/j.tate.2004.12.005

Lunenberg, M., Korthagen, F., & Swennen, A. (2007). The teacher educator as a role model. Teaching and Teacher Education, 23(5), 586–601. https://doi.org/10.1016/j.tate.2006.11.001

Maroucho, D. (2011). Faculty conceptions of teaching: Implications for teacher professional development. McGill Journal of Education, 46(1), 123–132. https://doi.org/10.7202/1005673ar

Martell, C. (2014). Building a constructivist practice: A longitudinal study of beginning history teachers. The Teacher Educator, 49(2), 97–115. https://doi.org/10.1080/08878730.2014.888252

MOE [Ministry of Education]. (2009a). Continuous professional development for primary and secondary school teachers, leaders and supervisors in Ethiopia: The framework. Author.

MOE [Ministry of Education]. (2009b). Continuous professional development for primary and secondary teachers, leaders and supervisors in Ethiopia: The practical toolkit. Author.

Mujis, D., & Reynolds, D. (2002). Being or doing: The role of teacher behaviors and beliefs in school and teacher effectiveness in mathematics, a SEM analysis. doi: 10.1.1.455.1890

Nespor, J. (1987). The role of beliefs in the practice of teaching. Journal of Curriculum Studies, 19(4), 317–328. https://doi.org/10.1080/0022027870190403

Northcote, M. (2009). Educational beliefs of higher education teachers and students: Implications for teacher education. Australian Journal of Teacher Education, 34(3), 69–79. https://doi.org/10.14221/ajte.2009v34n3.3

OECD [The Organization for Economic Cooperation and Development]. (2009). Creating effective teaching and learning environments: First results from TALIS. Author.

Pojares, M. (1992). Teachers’ beliefs and educational research: Cleaning up the messy construct. Review of Educational Research, 62(3), 307–332. https://doi.org/10.3102/00336543062003307

Postareff, L., & Lindblom-Ylänne, S. (2008). Variation in teachers’ descriptions of teaching: Broadening the understanding of teaching in higher education. Learning and Instruction, 18(2), 109–120. https://doi.org/10.1016/j.learninstruc.2007.01.008

Prawat, R. (1992). Teachers’ beliefs about teaching and learning: A constructivist perspective. American Journal of Education, 100(3), 354–395. https://doi.org/10.1086/444021

Prosser, M., Trigwell, K., & Taylor, P. (1994). A phenomenographic study of academics’ conceptions of science learning and teaching. Learning and Instruction, 4(3), 217–231. https://doi.org/10.1016/07400769(94)90024-8

Ray, J. (2002). Constructivism and classroom teachers: What can early childhood teacher educators do to support the constructivist journey? Journal of Early Childhood Teacher Education, 23(4), 319–325. https://doi.org/10.1080/1090102020230404

Richards, J. (1996). Teachers’ maxims in language teaching. TESOL Quarterly, 30(2), 281–296. https://doi.org/10.2307/3588144

Richardson, V. (1997). Constructivist teaching and teacher education: Theory and practice. In V. Richardson (Ed.), Constructivist teacher education (pp. 3–14). The Falmer Press.

Richardson, V. (2003). Constructivist pedagogy. Teachers College Record, 105(9), 1623–1640. https://doi.org/10.1080/107207203.003.00303.x

Richardson, V. (2010). Approaches to studying, conceptions of learning and learning styles in higher education. Learning and Individual Differences, 21(3), 288–293. https://doi.org/10.1016/j.lindif.2010.11.015

Russell, T. (2005). Using the practicum in preservice teacher education programs: Strengths and weaknesses of alternative assumptions about the experiences of learning to teach. In G. Hoban (Ed.), The missing link in teacher education design: Developing a multi-linked conceptual framework (pp. 135–152). Springer.

Samuelowicz, K., & Bain, J. (1992). Conceptions of teaching held by academic teachers. Higher Education, 24, 93–111. DOI: 10.1007/BF00138620

Samuelowicz, K., & Bain, J. (2001). Revisiting academics’ beliefs about teaching and learning. Higher Education, 41(3), 299–325. https://doi.org/10.1023/A:1004130031247

Schreiber, J., & Asner-Self, K. (2011). Educational research: The interrelationship of questions, sampling, design, and analysis. John Wiley & Sons Inc.
Semela, T. (2014). Teacher preparation in Ethiopia: A critical analysis of reforms. Cambridge Journal of Education, 44(1), 113–145. https://doi.org/10.1080/0305764X.2013.860080

Struyven, K., Dochy, F., & Janssens, S. (2010). ‘Teach as you preach’: The effects of student-centred versus lecture-based teaching on student teachers’ approaches to teaching. European Journal of Teacher Education, 33(1), 43–64. https://doi.org/10.1080/02619760903457818

Subramaniam, K. (2014). Student teachers’ conceptions of teaching biology. Journal of Biological Education, 48(2), 91–97. https://doi.org/10.1007/s10888-013-9374-0

Swennen, A., Lunenber, M., & Korthagen, F. (2008). Preach what you teach! Teacher educators and congruent teaching. Teachers and Teaching: Theory and Practice, 14(5–6), 531–542. https://doi.org/10.1080/13540600802571387

Swennen, A., Shagrir, L., & Cooper, M. (2009). Becoming a teacher educator: Voices of beginning teacher educators. In A. Swennen & M. Klink (Eds.), Becoming a teacher educator: Theory and practice for teacher educators (pp. 91–101). Springer.

Temechegn, E. (2006). Reflections on the rationale for the Ethiopian Teacher Education System Overhaul (TESO). In L. Dahlström & J. Mannberg (Eds.), Critical educational visions and practices in neo-liberal times (pp. 97–106). Global South Network Publisher.

Tillerna, H. (1999). Stability and change in student teachers’ beliefs about teaching. Teachers and Teaching, 4(2), 217–228. https://doi.org/10.1080/1354060980040202

Trigwell, K., & Prosser, M. (1998). Changing approaches to teaching: A relational perspective. Studies in Higher Education, 23(1), 275–284. https://doi.org/10.1080/03075079612331381211

Trigwell, K., & Prosser, M. (2004). Development and use of the approaches to teaching inventory. Educational Psychology Review, 16(4), 409–422. https://doi.org/10.1007/s10648-004-0007-9

Trigwell, K., Prosser, M., & Taylor, E. (1994). Qualitative difference in approaches to teaching first year science teachers. Higher Education, 27(1), 75–84. https://doi.org/10.1007/BF01383761

UNICEF. (2010). Child-Friendly Schools: Ethiopia Case Study. Author.

Vernunt, D., & Verloop, N. (1999). Congruence and friction between learning and teaching. Learning and Instruction, 9(3), 257–280. https://doi.org/10.1016/S0740-0769(98)00028-0

Wang, Y. (2002). When technology meets beliefs. Journal of Research on Technology in Education, 35(1), 150–161. https://doi.org/10.1080/15391523.2002.10782376

Wong, S., Yung, W., Cheng, M., Lam, K., & Hodson, D. (2006). Setting the Stage for developing pre-service teachers’ conception of good science teaching: The role of classroom videos. International Journal of Science Education, 28(1), 1–24. https://doi.org/10.1080/09500690500239805

Yerrick, R. K., & Hoving, T. J. (2003). One foot on the dock and one foot on the boat: Differences among pre-service science teachers’ interpretations of field-based science methods in culturally diverse contexts. Science Education, 87(3), 390–418. https://doi.org/10.1002/sce.10057

Yilmaz, H., & Çavuş, P. (2008). The effect of the teaching practice on pre-service elementary teachers’ science teaching efficacy and classroom management beliefs. Eurasia Journal of Mathematics, Science & Technology Education, 4(1), 43–54. DOI: 10.12973/ejmste/75305

Yung, B., Wong, S., Cheng, M., Hui, C., & Hodson, D. (2007). Tracking pre-service teachers’ Changing conceptions of good science teaching: The role of progressive reflection with the same video. Research in Science Education, 37(3), 239–259. https://doi.org/10.1007/s11165-006-9024-7

Zanting, A., Verloop, N., & Vernunt, D. (2001). Student teachers eliciting mentors’ practical knowledge and comparing it to their own beliefs. Teaching and Teacher Education, 17(6), 725–740. https://doi.org/10.1016/S0742-051X(01)00026-9
