Mwanakhamis Ameir

SUPPORTING ACTIVE LEARNING TEACHING TECHNIQUES THROUGH COLLABORATIVE LEARNING AND FEEDBACK IN ZANZIBAR, A CHALLENGING EDUCATIONAL CONTEXT
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Abstract

This study investigates teachers’ knowledge and practices in a teaching and learning challenging context (TLCC) and how to support their active learning teaching techniques (ALTTs) through collaborative learning and feedback. This study was conducted in two Zanzibar public schools where a class size is 70–120 students without educational technologies. Eight female English teachers (N = 8) and four large classes were involved in the observations.

The study consists of three parts of data collection. The first investigates teachers’ knowledge and activities in their daily teaching practices in which data from semi-structured interviews and sixteen video lessons observations were collected. The data were also used to discern teachers’ ALTTs before the training. Then, active learning, collaborative learning and feedback were applied as a pedagogical support in the two-week training to help teachers develop their ALTTs. The second part was conducted after the teachers’ training when 32 video of lesson observations were collected. The data was intended to reveal what ALTTs the teachers used after the training. The third part consisted of open-ended questionnaires answered by eight teachers and 150 students to collect supplemental data of the ALTTs the teachers used after the training, and to discover the participants’ perceptions of applying active learning, collaborative learning and feedback activities in the TLCC. All the data were analyzed using content analysis.

The results indicated that teachers both possess and lack some knowledge of teaching activities. However, they fail to put the knowledge they possess into classroom practice. Interestingly, despite the TLCC, teachers were able to develop their ALTTs when supported with pedagogical training. The teachers and the students perceived collaborative learning and feedback activities as effective techniques in their context although they stated that the techniques could be more effective with the support of resources in a small class setting. These findings add to the understanding of the importance of applying ALTTs and practical pedagogical training for teachers and demonstrate that these ALTTs can be applied even in a TLCC. The results also suggest that international researchers can develop new educational ideas that may support and benefit teaching practices in TLCCs.

Keywords: active learning, collaborative learning, feedback, large class, teacher’s knowledge, teaching techniques

Tiivistelmä

Tässä väitöskirjassa tutkitaan opettajien oppimista ja opetusta koskevaa tietoa ja käytäntöjä haastavassa oppimis- ja opetuskontekstissa sekä keinoja tukea aktiivista oppimista yhteisöllisen oppimisen ja palautteen avulla. Tutkimus toteutettiin kahdessa zanzibarilaisessa julkisessa koulussa, joissa ryhmäkoko on 70–120 oppilasta eikä käytössä ole koulutusteknologiaa. Tutkimuksessa havainnointiin kohdakeksaa englannin kielen opettajaa ja neljää suurta oppilasyrhmää.


Asiakirjallisuus:


Asiasanat: aktiivinen oppiminen, opettajien tieto, opetuskäytännöt, palautteenavulla, suurryhmäopetus, yhteisöllinen oppiminen
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Oulu, February 2020

Mwanakhamis Adam Ameir
### Abbreviations

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<th>Description</th>
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<tbody>
<tr>
<td>ALTTs</td>
<td>Active Learning Teaching Techniques</td>
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<tr>
<td>EFA</td>
<td>Education for All</td>
</tr>
<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
</tr>
<tr>
<td>MoEVT</td>
<td>Ministry of Education and Vocational Training – Zanzibar</td>
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<tr>
<td>NTRC</td>
<td>National Teacher Resource Center</td>
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<tr>
<td>RGZ</td>
<td>The Revolutionary Government of Zanzibar</td>
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<td>TCs</td>
<td>Teacher Centers</td>
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<td>TLCC</td>
<td>Teaching and Learning Challenging Context</td>
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<td>TTCs</td>
<td>Teacher Training Colleges</td>
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<tr>
<td>UNESCO</td>
<td>The United Nations Educational, Scientific and Cultural Organization</td>
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<td>ZEDP</td>
<td>Zanzibar Education Development Plan</td>
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1 Introduction

Teachers are important stakeholders in students’ learning (Fishman, Davis & Chan, 2014). Their knowledge and everyday practices in the classroom can determine students’ understanding. When teachers have knowledge about their teaching, they are likely to achieve their goals or track the challenges of their teaching practices (Juma, Lehtomäki & Naukkarinen, 2017). Studies have shown that what teachers know or believe about their teaching can affect their pedagogical behavior and, thus, result in the use of certain teaching instructions and the rejection of others (Alisaari & Heikkola, 2017; Chapoo, Thathong & Halim, 2014; Mihaela & Alina-Oana, 2015). The quality of teachers’ knowledge is assessed through their teaching activities (Connelly, Clandinin & He, 1997). It is thus important to make sure that teachers have knowledge of their teaching activities and are able to put that knowledge into classroom practice. Teachers working in teaching and learning challenging contexts (TLCCs) may need special support to help them face their teaching challenges. Although much has been researched about teachers’ knowledge and practices and how to support them, there is a need for research which specifically investigates teachers working in TLCCs, their knowledge, their practices, and possible support for their contexts.

In order to support teachers’ practices in TLCC, we need to understand exactly what challenges they face and determine what can be done to support them in overcoming or minimizing those challenges. Examples of such challenges are: (1) classes that are so crowded that teachers do not have the opportunity to interact with students individually or check if the students understand the lesson, and (2) lack of educational technologies that could help in teaching such crowded classes. The issues of large classes and teaching resources are recognized as major challenges affecting teaching and learning, especially in developing countries (Benbow, Mizrachi, Oliver & Said-Moshiro, 2007; Frederick, 1987; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2006). Many studies have reported on the negative effects of large class size in the teaching and learning process (Breton, 2014; Brühwiler & Blatchford, 2011; Ndethiu, Masingila, Miheso-O’Connor, Khatete & Heath, 2017). A number of studies exist also indicating the positive effects of educational technologies in the teaching and learning process (Adesote & Fatoki, 2013; Ezekoka, 2015; Shieh, 2012). One idea is that the simplest and most direct way to help teachers overcome such challenges is to reduce the class size and support teachers with educational technologies. However, when the economic status of the context cannot afford this simple
solution to the problem, something on the professional level is required to support teachers’ practices. In such a context, supporting teachers with professional practices that will help them use active learning teaching techniques (ALTTs) with their students can reduce the impact of the problem. This study investigated teachers’ knowledge and practices in a TLCC and applied the approaches of active learning, collaborative learning, and feedback as pedagogical support to develop teachers’ ALTTs in such a context.

Active learning is described as “educational methods in which students are involved in higher-order thinking (analysis, synthesis, evaluation)” (Neal, 2010, p. 2). This approach to learning requires students to carry out meaningful learning activities and think about what they are doing (Prince, 2004). In an active learning class, teachers need to use instructional methods that engage students in the learning process, such as, organizing learning activities, providing tasks, asking questions, and promoting learning participation and interaction among students. What is important is what teachers do in the classroom to facilitate students’ learning. What do they actually do to activate this learning? Are their actions leading students to carry out any learning-related activities or not?

Collaborative learning and feedback are interactive teaching and learning pedagogies that can be used to facilitate active learning. Collaborative learning involves students working together in a team and taking responsibility for their work; learning is expected to take place through teamwork (Miyake & Kirschner, 2014). During collaborative learning, giving and receiving feedback plays an important role in the learning process (Golbeck & El-Moslimany, 2013). With peer collaboration, students learn how to present and defend their ideas, as well as how to comment on the ideas of their fellow students (Golbeck & El-Moslimany, 2013). The process of working together in collaborative groups for the purpose of task completion encourages students to interact, listen to each other’s ideas, and reach a mutual understanding of how to perform and complete the task. Thus, by facilitating collaborative learning activities, teachers use ALTTs and assume the role of active learning facilitators.

Feedback is defined as “the information provided by an agent (teacher, peer, book, parents, self, experience) regarding aspects of one’s performance or understanding” (Hattie & Timperley, 2007, p. 81). In the learning process, students can receive feedback from teachers or peers about how well they perform the task, including what is challenging and what needs to be improved. Studies have shown that giving effective feedback promotes student learning (Cutumisu & Schwartz, 2018; Farid & Samad, 2012; Jamalinesari, Rahimi, Gohrarry & Azizifar, 2015). In
this study, it was assumed that, when teachers give feedback and encourage
students to give feedback, they increase participation, interaction, and task
performance among the students. In such processes, the teachers use ALTTs and
undertake the role of teachers who facilitate active learning.

Research on active learning, collaborative learning, and feedback have shown
how these teaching–learning approaches are effective for student learning. The aim
of this dissertation was to help teachers develop their ALTTs through these
approaches in the specific teaching and learning context of Zanzibar, where large
classes lacking teaching and learning technologies exist. Studies have shown that,
when teachers play their role effectively, they can bring about change (Hattie, 2003).
Thus, in the context of a TLCC, the ability of teachers to use ALTTs is important.

Zanzibar is part of the United Republic of Tanzania. The current education
policy in Zanzibar aims to improve the quality and effectiveness of the education
system by improving the education and training of teachers so that their knowledge
and skills respond to the society changes and expectations (Ministry of Education
and Vocational Training – Zanzibar [MoEVT], 2006). The government of Zanzibar
has taken various actions to improve the quality of education, such as increasing
the emphasis on teacher training, expanding the availability of teaching and
learning resources, and building more classrooms to reduce the number of crowded
ones (MoEVT, 2006, 2014). Despite these positive efforts, there are still many
challenges that prevent Zanzibar from achieving its educational goals. The lack of
teaching and learning resources and the crowded classes in most government
schools are serious challenges (MoEVT, 2006). The class size in Zanzibar often
exceeds 40 students. The situation of crowded classes has led many schools in
Zanzibar to operate in double shifts—a morning shift and an afternoon shift. This
schedule affects students, who are given insufficient time for learning (MoEVT,
2006).

These challenges, and many others not mentioned in this dissertation, interfere
with the provision of quality education in Zanzibar. Thus, the main aim of this
dissertation was to help teachers develop ALTTs in TLCCs. This was intended to
be achieved through the following three objectives: exploring teachers’ knowledge
and daily teaching activities; developing teachers’ ALTTs; and examining teachers’
and students’ perceptions about the applicability of active learning, collaborative
learning, and feedback in their particular context.

First, the knowledge and activities of teachers working in TLCCs was
investigated, with the assumption that understanding what they know and do can
reveal ways to support and improve their practices. Studies have shown that
teachers’ knowledge influences their classroom instruction (Mansor, Halim & Osman, 2010). When teachers have knowledge about their teaching and when their teaching context is conducive to learning, they are generally predicted to teach their students effectively. Much research has investigated teachers’ knowledge and practices, but less attention has been given to teachers working in TLCCs. Because there are so many factors that may disrupt effective teaching in TLCCs, it is important to specifically investigate the knowledge and daily teaching activities of the teachers working in such contexts. This investigation helps to determine what knowledge the teachers possess or lack and what their teaching activities in TLCCs are. Thus, in this study, through lesson observations, teachers showed their daily activities in their specific challenging context. The semi-structured interviews were also used to explore what teachers know about their daily teaching activities.

Second, this study aimed to develop teachers’ ALTTs. The teachers received two weeks of training to support their knowledge and skills in active learning, collaborative learning, and feedback. The training was intended to develop their teaching activities into more activating teaching techniques. Considerable research has indicated that teacher training is effective for professional development (Balbay, Pamuk, Temir & Dogan, 2018; Çer & Solak, 2018; Solak, 2016; Tondeur, Aesaert, Prestridge & Consuegra, 2018). Additionally, studies have shown that active learning (Bonwel & Eison, 1991), collaborative learning (Laal & Ghodsi, 2012), and feedback (Hattie & Timperley, 2007) are effective approaches in teaching and learning processes. Many studies have investigated, for example, collaborative learning and active learning in small classes in contexts where teachers can easily interact with the entire class by using various teaching technologies. The large class size and the serious shortage of teaching and learning technology in this study made the application of these interactive teaching techniques even more challenging than in small classes that do have access to educational technologies. Thus, it was essential to investigate teachers’ ALTTs supported by collaborative learning activities and feedback production in TLCCs. This was investigated through lesson observations and the use of open-ended questionnaires.

Third, this study aimed to examine the teachers’ and students’ perceptions of the applicability and usefulness of active learning, collaborative learning, and feedback in their contexts. Although studies have reported positive effects of these approaches, there is also a debate about whether active learning works or not (Prince, 2004). There is also a discussion around the effect of class size on student learning (Bandiera, Larcinese & Rasul, 2010; Cheng, 2011; Galton & Pell, 2012; Hattie, 2005). This study did not specifically investigate what works or does not
work for any of the concepts used in this dissertation, but rather aimed to investigate teachers’ and students’ perceptions of applying these approaches in their context. In this study, the teachers received training and practiced what they learned in the actual classroom context. As teachers and students are the ones who experience teaching and learning in TLCCs, it is important to understand their perceptions of using these interactive techniques, since studies have shown that effective learning occurs when learners can evaluate their own learning process and strategies (Nelson & Narens, 1994; Ruohotie, 1994). The particular TLCC of this study is what makes examining the teachers’ and students’ perceptions of applying these techniques significant. Understanding their perceptions about the effectiveness and challenges of using these approaches may serve as a guide for how to organize support for teaching and learning in their context. The open-ended questionnaires were used to understand what was perceived as effective or challenging in applying these approaches.

The findings of this research will provide information about teachers’ knowledge and their daily practices in TLCCs. By understanding teachers’ knowledge and their practices, it is possible to determine what kind of support the teachers need to improve their practices. The findings of the teachers’ lesson observations after the training, and teachers’ and students’ perceptions of applying active learning, collaborative learning, and feedback provided information about the possibilities and challenges of applying these interactive pedagogical techniques. Gaining this understanding, will help education stakeholders in the context of this study and those in other places in the world with similar contexts understand what actions need to be taken to support teachers’ practices.

This dissertation consists of several chapters. After the first chapter of introduction, the second chapter discusses education in Zanzibar—its progress and challenges. The third chapter reviews the theoretical background and basic concepts that guided the research. The fourth chapter explains the aim and research questions of the study. The fifth chapter illustrates the methodological process, data collection methods, and analysis. The sixth chapter presents the results. The final chapter discusses the main findings, implications, and limitations of this study and suggests recommendations for future studies.
2 Education in Zanzibar: Progress and challenges

Zanzibar, on the coast of East Africa, consists of two main islands, Unguja and Pemba, and also includes other smaller islets in the Indian Ocean. In 1964, it was united with Tanganyika to form the United Republic of Tanzania. Education activities in Zanzibar are organized and supervised by the Ministry of Education and Vocational Training, Zanzibar (MoEVT). However, from the level of Form 3 (ordinary secondary level), MoEVT works with the Ministry of Education of the United Republic of Tanzania to organize and supervise education activities for Zanzibar. Since this study was conducted to support teachers’ practices in the Zanzibar context, this chapter briefly describes education in Zanzibar in terms of steps targeted at improving the quality of teaching and learning activities, progress achieved, and challenges found in the process of improving the quality of education.

The government of Zanzibar is working hard to ensure it provides quality education to its people through the improvement of various aspects, including the implementation of a new educational structure and curriculum reform (MoEVT, 2014). Additionally, Zanzibar is making a commitment to follow international conventions related to education, such as the goals set by the Education for All (EFA) initiative. EFA is a global movement led by UNESCO, aiming to meet the learning needs of all children, youth, and adults. This commitment led to the establishment of different educational plans and actions, such as the Zanzibar Education Master Plan (ZEMAP: 1996–2006), and later, the Zanzibar Education Development Plan (ZEDP: 2008/2009–2015/2016). The issue of quality education is also mentioned in the Zanzibar Development Vision 2020, which was launched in 2000 for the purpose of eradicating poverty and attaining sustainable development in the social, political, cultural, and economic sectors (The Revolutionary Government of Zanzibar [RGZ], 2007). This vision, popularly known as “Zanzibar Vision 2020,” predicts where the nation expects to be by 2020. Concerning education, it is predicted in the vision that, by 2020, the objective of improving the standard of education to meet the challenges of the twenty-first century will be achieved (RGZ, 2007).

One of the important steps taken by Zanzibar to improve education is to produce a clear education system structure. It is noted in the Zanzibar education policy that the educational structure in Zanzibar was difficult and confusing until 2006 (MoEVT, 2006). According to the policy, the new structure of formal education shall be 2-6-4-2-3+, which means two years of pre-primary education,
six years of primary education, four years of secondary education at the ordinary level, two years of advanced level secondary education, and a minimum of three years of higher education (MoEVT, 2006). Figure 1 illustrates the Zanzibar educational structure currently followed.

![Fig. 1. The structure of the Zanzibar educational system (Revolutionary Government of Zanzibar – Ministry of Education and Vocational Training, 2014, p. 2; published by permission of Creative Commons Attribution CC BY 4.0 License).](image)

In addition to introducing a new educational structure system, the objectives of Zanzibar education aim to increase the quality and effectiveness of its education by improving the education and training of teachers. The goal is to empower teachers with knowledge and skills that will help them respond to the needs of the different learners (MoEVT, 2006). This issue of improving the quality of education through teacher training is also described in the Zanzibar Strategy for Growth and Reduction of Poverty (The Revolutionary Government of Zanzibar, 2007), which is a national plan identifying sectors that need attention in the mission for economic growth and the reduction of poverty in the country. One of the operational targets in that national plan is to improve the quality of education at all levels, and a shortage of qualified teachers is mentioned as the key issue to be addressed (RGZ, 2007). In addition, improving teacher education programs as a step to increase the quality of education was also stated as a key issue in the ZEDP (MoEVT, 2016).
The ZEDP was introduced to implement the Zanzibar education policy of 2006. One of the targets of ZEDP is to improve the availability of qualified teachers and learning materials (MoEVT, 2016). Moreover, Zanzibar, through the Ministry of Education of the United Republic of Tanzania, is a participant in different international conventions and agreements including EFA. In 2000, Zanzibar was among the governments that promised to achieve EFA goals by 2015. One of those goals was to “improve all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all…” (MoEVT, 2014, p. 129). In the implementation of this EFA goal, Zanzibar has focused on the improvement of teachers’ training, availability of teaching and learning resources, and the building of more classrooms (MoEVT, 2006, 2014).

Along with the progress made in improving teacher training is the establishment of teachers’ training colleges (TTCs) which provide pre-training for future teachers. Currently, there are TTCs that provide training for teachers at the certificate, diploma, and bachelor levels. The teachers who receive certificate training are normally required to have completed four years of ordinary secondary education level, or two years of advanced level secondary education. Teachers who are trained to the diploma and degree levels are expected to have completed two years of advanced level secondary education. Through the availability of these institutions, teachers become more aware of the need to upgrade their levels of education (MoEVT, 2006).

Additionally, the MoEVT has established teacher training centers (TCs) to provide professional support for teachers. These TCs are located in various zones and are near where teachers live and work. Zonal TCs are linked with a National Teacher Resource Center (NTRC) to support teachers’ professional development. The role of the TCs is to advise teachers on effective ways to teach and provide professional support wherever needed (MoEVT, 2014). TCs are also designed to improve teacher effectiveness by organizing in-service training to upgrade teachers’ content knowledge and skills; they also serve as a meeting place for teachers to share ideas and discuss their experiences (MoEVT, 2006). TCs are noted to have made a contribution to Zanzibar teachers’ professional development (Mosha, 2015). Despite the progress reported through the TCs, challenges remain. The MoEVT (2006) stated challenges are the shortage of adequate teaching and learning resources and the inadequate capacity of TC supporting staff to manage the centers. The challenges facing the NTRC are also reported in a study that was conducted to investigate the role of the NTRC in teachers’ professional development in Zanzibar (Mosha, 2015). The researcher reported that the shortage of teaching facilities,
inadequate classrooms, poor school environments, and the use of the traditional model of training by the NTRC affected the quality of training and teachers’ performance in Zanzibar.

There are still challenges in teachers' training programs where teacher training is carried out with no clear policies or guidelines, and there is a lack of coordination between pre-service and in-service training (MoEVT, 2006). The ZEDP review also mentioned that the problem of low-skilled, under-qualified, and poorly motivated teachers is among the crucial issues facing Zanzibar education (MoEVT, 2016).

As described, Zanzibar promised to achieve the EFA goals by 2015. To examine the progress and challenges of Zanzibar education in the implementation of EFA goals, the EFA conducted the End of Decade assessment to report on the status of Zanzibar education. The report identified the progress achieved in increasing the construction of new schools and rehabilitating classrooms, school libraries, laboratories, and other infrastructure. These efforts improved the quality of education, for example, by reducing the national pupil–classroom ratio from 87:1 in 2001 to 67:1 in 2013 (MoEVT, 2014). However, the EFA reported that there are still some challenges of crowded classes. For example, primary education continues to be characterized by severe classroom shortages and serious overcrowding in some areas, and most class sizes exceed the benchmark of 40 students per class (MoEVT, 2006). In some schools, the pupil to classroom ratio is up to 180:1; in other schools, it is as low as is 50:1 (MoEVT, 2014). The large number of students resulted in most Zanzibar schools having to operate on a double-shift schedule. In the double-shift schools, there is a morning shift and afternoon shift; classes run from 7:15 a.m. to 12:50 p.m. for the morning shift, and the afternoon shift runs from 1:00 p.m. to 5:55 p.m. The Educational Statistical Abstract of RGiZ (2014) stated that up to 73% of schools operate the double-shift schedule in some districts of Zanzibar. Figure 2 is a screenshot of one crowded class during the data collection of the study.
In the effort to provide quality education, Zanzibar, under the MoEVT, has become aware of the importance of resources in the teaching and learning process. Efforts are made to ensure that adequate resources are available in schools. For example, it is noted that some classes in primary schools were provided with textbooks, and more effort was made to provide textbooks for other classes (MoEVT, 2014). In addition, in 2008, MoEVT distributed laboratory equipment and chemicals for chemistry, biology and physics courses to some secondary schools in Unguja and Pemba and to all TCs (MoEVT, 2014). Moreover, TCs have begun contributing to the production of teaching and learning materials. However, the scarcity of teaching and learning resources in most government schools is seen as a serious challenge (MoEVT, 2006). While assessing the quality of primary school input in Zanzibar in respect to teaching and learning materials, Salim and Mohamed (2011) reported that “around one in every six pupils (16%) did not have all the three basic learning items (exercise book, ruler, pen or pencil) that are considered necessary for effective participation in classroom activities” (p. 3). It has also been found that there continues to be a lack of learning facilities and unsatisfactory utilization of information and communication technology (ICT) in teaching and learning. In fact, the MoEVT (2006) stated that “there is a serious shortage of teaching/learning materials in schools, inadequate stocks of books, lack of electronic materials, limited resource, and additionally, schools are unable to take advantage of recent development in ICT” (pp. 30–34). The shortage of teaching and learning materials
is also stated as a serious problem in the ZEDP review (MoEVT, 2016), as well as in the study conducted to investigate the role of the NTRC in teachers’ professional development in Zanzibar (Mosha, 2015). Figure 3 shows the status of the availability of some school resources, such as computers, libraries, projectors, and televisions, in primary schools according to Zanzibar districts.

<table>
<thead>
<tr>
<th>District</th>
<th>Percentage of schools with</th>
<th>Average number of per school</th>
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<td>Water</td>
<td>Electricity</td>
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<tr>
<td>Urban</td>
<td>90</td>
<td>100</td>
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<td>West</td>
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<td>North A</td>
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<td>North B</td>
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<td>Central</td>
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<tr>
<td>South</td>
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<td>Chake Chake</td>
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<td>Mboani</td>
<td>81</td>
<td>67</td>
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<tr>
<td>TOTAL</td>
<td>83</td>
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</tbody>
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Fig. 3. Availability of various facilities in primary schools in Zanzibar by district (Revolutionary Government of Zanzibar – Ministry of Education and Vocational Training, 2014, p. 27; published by permission of Creative Commons Attribution CC by 4.0 license).

It can be concluded that Zanzibar is working hard to ensure the provision of quality education. Various plans and actions have been executed to achieve this goal. Yet, despite the progress made in those efforts, there remain serious challenges that impact the effectiveness and quality of the educational system, specifically in the areas of teacher training, class size, and the availability of teaching and learning resources. This affects teaching and learning practices. Thus, this study was conducted to support teachers’ ALTTs so that its results might contribute practically to supporting Zanzibar’s efforts to provide quality education.
3 Theoretical background and key concepts of the study

This chapter reviews the active learning approach, its origin and meaning, how it is reported in studies, and its role in this study. It then discusses the key concepts of the study: collaborative learning, feedback, teacher training, teachers’ knowledge and practices, the teacher’s role in teaching, and the TLCC. In the discussion of these concepts, it is explained how they are related to the study. Finally, the chapter is concluded by summarizing how active learning and the other key concepts are interrelated in this study.

3.1 Active learning

The idea of active learning as associated with a student-centered approach has been a topic of interest for educators since the late 1970s (Kirpik, 2009). The theoretical foundation of active learning is associated with the educational philosopher John Dewey and his philosophy of learning by doing; he believed that people learn better when they are engaged in activities (Drake, 2012). According to Drake (2012), Jean Piaget also contributed to the theoretical foundation of active learning. Piaget, through his theory of children’s cognitive development, believed that learners construct their own knowledge through the physical and logical experiences to which they are exposed (Miller, 2002). Piaget emphasized the importance of knowing how the mind functions during the learning process. Dewey’s philosophy of learning by doing and Piaget’s active approach to learning which stresses the involvement of mind are described in cognitivist and constructivist approaches to learning. Cognitive theory describes the process of how a person perceives, thinks, and gains understanding of his or her world through the interaction of genetic and learned factors (Leonard, 2002). According to Leonard, cognitive theory emphasizes conscious thought and the mind in determining how people think, understand, and know. Constructivism posits that the meaning of knowledge is actively constructed in the human mind (Kirpik, 2009; Richardson, 2003). It suggests that learning is an active, contextualized process of constructing knowledge where it is enhanced by social interaction and that meaningful learning is developed through authentic tasks (Cooperstein & Kocevar-Weidinger, 2004). In constructivism, the important aspects in learning are the quality of the students’ activities which must lead them to engage themselves in higher thinking levels (Cooperstein & Kocevar-Weidinger, 2004; Richardson, 2003). This implies that
teaching activities that involve the active participation of students and engage them in thinking and constructing knowledge are considered to be important aspects of both cognitivism and constructivism.

The idea of learning as active participation in constructivism, and the conscious mind in cognitivism, describes the concept of active learning. Many definitions are given to describe what is meant by active learning. However, in most descriptions, the concept of students' participation in their own learning seems to be the key idea behind the approach. Bonwell and Eison (1991), for example, have described active learning as any classroom activity where students are involved in doing things and supported to think about the things they are doing. Felder and Brent (2009) also associated active learning with doing, with teachers involve students in their own learning by posing questions to them, engaging them in learning activities, grouping them and assigning tasks to them, making them aware of challenging issues that they will have to discuss, and asking them individually or in groups to share what they were discussing. The idea is that active learning must involve high student participation. Additionally, Neal (2010, p. 2) defined active learning as “…educational methods in which students are involved in higher-order thinking (analysis, synthesis, evaluation)”. Kirpik (2009) described active learning as an approach to learning in which students are given the responsibility of regulating their own learning. All these descriptions of active learning describe processes of improving students’ learning by involving them in. Niemi (2002), in her study’s questionnaire, enumerated some of active learning activities that indicate the involvement of students in their learning. Some of the activities are measured when students do the following: independently plan and carry out learning tasks; work in groups on problem-solving tasks; independently produce reviews, outlines of sessions, and presentations; elaborate on their assignments independently or in peer groups; take the responsibility for planning and carrying out fairly large projects; discuss together the best solution for the assignments; self-evaluate their own products; and are tutored, if needed, but otherwise they work independently or in peer groups. When learning involves some of these activities it is considered active learning.

In summation, in this dissertation, active learning describes a learning approach in which teachers must involve students in various cognitive learning activities that make them aware of what they are learning throughout the entire process. Halpern and Hakel (2003) stated that what is important in active learning is what the instructor is asking students to do, rather than what he or she (the instructor) is doing. Thus, teachers’ activities in an active learning class are
extremely important. Teachers need to use different activating teaching techniques to involve students to perform learning activities and develop their thinking through those learning activities. Thus, in this study, the investigation of active learning was not concerned with students’ learning per se, but with teachers’ activities that promote that learning. Teachers and their practices were investigated to determine if they can use ALTTs in a TLCC.

### 3.1.1 Studies about active learning

Most of the studies about active learning investigated the effects of active learning on students’ learning outcomes. Those studies have found that active learning leads students to a better understanding or performance than traditional learning (Akınoğlu & Tandogan, 2007; Aricò & Lancaster, 2018; Bakir, 2011; Barker, 2004; Bonwel & Eison, 1991; Kim, Sharma, Land & Furlong, 2013; Michael, 2006). Traditional learning is seen as a teacher-centered approach where students’ activities are limited to note-taking (Freeman, et al., 2014). For example, a meta-analysis study was conducted to investigate studies that reported examination scores or failure rates in courses taught using active learning and those taught using traditional learning methods (Freeman, et al., 2014). Freeman, et al.’s study specifically analyzed the performance in undergraduate science, technology, engineering, and mathematics in 225 studies from various sources. The sources included unpublished dissertations, conference proceedings, peer review sources, manual searching of studies from 55 journals that published papers about science, technology, engineering, and mathematics [STEM] from June 1998 to January 2010, searching seven online databases (Web of Science, Expanded Academic Index, PubMed, Education Resources Information Center, Compendex, ProQuest Science, and ProQuest Dissertations and Theses), and selection of papers from the reference lists of the selected studies. The results indicated that active learning has improved students’ performance in science, technology, engineering, and mathematics.

A qualitative and quantitative study by Akinoglu and Tandogan (2007) of 50 seventh-grade students in Istanbul public schools investigated the effects of problem-based active learning. The study used pre- and post-tests and treatment and control group models, as well as documents, as qualitative data sources. Students in the treatment group were taught using the problem-based active learning approach, while traditional teaching methods were applied to the control group. The authors tested the effect of these two teaching approaches in the
treatment and control groups by using an achievement test, open-ended questions, and an attitude scale for science education. Their results indicated that the active learning approach produced more positive learning outcomes than the traditional learning approach.

Additionally, Aydede and Matyar (2009) also observed the effects of active learning on students’ academic performance using an experimental method. The study used control and experimental groups; in the experimental group, the active learning approach was applied, and in control group, traditional teaching methods were applied. According to their study results, traditional teaching methods were determined to be those methods which seem to be less active, such as lectures. The study reported more positive changes in the experimental group in which active learning techniques were applied than in the control group in which the traditional approach was applied.

In examining the positive effects of the active learning approach on students, a study by Mohamed (2008) conducted to examine the impact of different teaching methods found that the teaching that had active learning components improved students learning. Mohamed’s study used a case study to measure the performance of 57 students’ outcomes on quizzes and exams. The performance measured teaching that used various teaching models, such as collaborative learning, traditional lecturing, and process-oriented guided inquiry learning. According to the researcher, collaborative learning and process-oriented guided inquiry learning involve components of active learning, so he concluded that students performed better on the content taught by active learning strategies.

Additionally, Braxton, Jones, Hirschy, and Hartley (2008) conducted a longitudinal study that used surveys to examine the impact of active learning on students’ level of overall social integration and perceptions of their institution’s commitment to student welfare. The study involved 408 first-year college and university students. After the analysis of students’ surveys, the results indicated that faculty uses of active learning played a significant role in the retention of first-year college students.

These positive effects of active learning reported in many studies, however, are also questioned in some studies. According to the studies that doubt the effect of active learning on students’ performance, it is not clear if active learning works in all situations or in all fields (Drake, 2012; Prince, 2004). For example, in a literature review study conducted by Prince (2004), the critical question “Does active learning work?” was asked. In Prince’s study, doubt about active learning’s effectiveness was expressed in the active learning studies that generalized the
effectiveness of active learning. It was concluded that the decision whether active learning works or not depends on different factors, such as what is studied and how the researchers measure and interpret what works. Drake (2012) also criticized active learning proponents for not being clear about its effectiveness and techniques, claiming that the activities that can be used to make students active are not specifically related to active learning and can be pulled from any other teaching approach. Generally, these critiques of active learning are focused on how active learning studies are conducted and how their findings are generalized, as it is not always correct to generalize the positive effects of active learning found in one field to other fields. Also, such criticism shows that it was unclear what exactly constitutes active learning in different studies. However, this debate about the effectiveness of active learning and its methods is not intended to ignore the role of teachers’ activities in supporting student learning, but to seek clarification on which aspects of active learning work better in which context. Recently, Bernstein (2018) suggested that the best approach is for researchers to investigate the ways that different active learning methods work in different situations. According to Bernstein, research that investigates what works in active learning can identify the gaps of understanding in what active learning methods can or cannot do.

Thus, one of the gaps in active learning studies is the proof of the applicability of ALTTs in all teaching and learning contexts. As shown in previous studies, it is not clear if active learning can produce positive outcomes in student performance in every field or context (Bernstein, 2018; Drake, 2012; Prince, 2004). The debate about active learning indicates the need to investigate the applicability of active learning techniques in different educational contexts. Because of the positive effects of active learning reported in various studies (Akinoglu & Tandogan, 2007; Aricò & Lancaster, 2018; Bakir, 2011; Barker, 2004; Bonwel & Eison, 1991; Kim, Sharma, Land & Furlong, 2013; Michael, 2006), the present study aimed to support teachers with ALTTs in a TLCC. Moreover, this study is different from the previous studies in terms of the context. In most studies about active learning, teachers are given a small group of students and investigate, often through experiments, how these students’ performance is affected by the ALTTs. In this study, the teachers were not investigated in an experimental context, but in actual classrooms with large classes and a scarcity of teaching and learning resources. This study, therefore, used classroom observations in real-life context and questionnaires to investigate teachers’ use of ALTTs in a TLCC. The training of teachers was also used as an intervention to support their ALTTs.
3.1.2 Active learning teaching methods and techniques

Mingazova (2014) has described active learning methods as “a set of pedagogical activities and methods aimed at organization of educational process and the creation of conditions by special means that motivate students to independent, proactive and creative study of educational material in the process of cognitive activity” (p. 85). A variety of active learning teaching methods are used to facilitate active learning. In this chapter, some of these are mentioned, not for their importance, but because they were found in many studies reviewed for this dissertation. Studies have shown that, when these methods and techniques are applied, they are expected to help students learn actively as the students are engaged in tasks that lead them to perform cognitive activities such as thinking, writing, or interacting (Bonwell & Eison, 1991; Eison, 2010). For example, Kirpik (2009) listed case study, problem-solving, writing tasks (such as preparation of a poster or a letter), and role-playing as active learning methods. In teaching, these methods can be accompanied by different techniques to support students’ execution of the task; for example, group work is mostly viewed as an important ALTT (Handy & Polimeni, 2015; Kirpik, 2009).

Moreover, Neal (2010) added some ALTTs, such as quizzes, interactive lecturing, questioning, in-class writing exercises, discussions, problem-solving, pair work, role-playing, simulations games, experiential learning, and other interactive teaching techniques. Michael and Modell (2003) listed problem-based or case-based learning, cooperative/collaborative learning/group work, think-pair-share or peer instruction, conceptual change strategies, inquiry-based learning, discovery learning, and technology-enhanced learning. Additionally, Mingazova (2014) stressed role-playing, simulation training computer games, game situations, and training exercises, as active learning methods. Bonnet, Herakova, and McAleXander (2018) also included active learning techniques such as writing exercises and reflections, debates and dialogues, role-playing, problem-based learning, simulations, and small and large group discussions.

In the literature, it seems that the word methods is used interchangeably with techniques to refer to teaching activities that promote students’ learning. All of these methods and techniques related to active learning have the common feature of involving students in their learning. The key idea is to create the context where students can use their metacognitive knowledge and skills. Metacognition is described as the conscious process of the learner in the learning process which includes thinking of the strategies that can be used in learning or solving a problem.
and being conscious of the results or consequences of the selected strategies (Nelson & Narens, 1994; Ruohotie, 1994). What is also seen as essential in these active learning methods and techniques is for teachers to support students learning by engaging them in tasks either in pairs or groups. Working together seems to be an important ALTT in which students are given the opportunity to interact, think, criticize, evaluate, and make decisions about their own learning.

3.2 Collaborative learning

Collaborative learning is described as a process of working together on a task where the team members learn from the task they do and learn through teamwork (Miyake & Kirschner, 2014). In collaborative learning, students interact in groups and are expected to learn through those interactions. This concept of learning through interaction is associated with social learning theory (SLT) which emphasizes that people learn through observing others’ behaviors as they can use the consequences of those behaviors to shape their own behavior (Zimmerman & Schunk, 2003). Collaborative learning is also described as an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product (Laal & Ghodsi, 2012; Laal & Laal, 2012). Golbeck and El-Moslimany (2013), while describing peer collaborative learning, defined it as learning that helps students learn how to express and defend their ideas, as well as to assess the ideas of their fellow students. The descriptions and definitions given of what collaborative learning is, indicate that it is a process of learning in which students are working together for a task and the learning occurs through their interactions, discussions, questioning, and feedback and from supporting each other in their process of task performance. Collaborative learning is a current trend in research teaching and is studied in different dimensions.

Enyedy and Stevens (2014) have differentiated four dimensions in studying collaborative learning. The first is studying collaboration as a window to thinking; researchers intend to investigate how collaboration helps individuals to think. The second dimension consists of the actions taken to initiate, respond, and evaluate (IRE), in which the teacher initiates a question, students respond, and the teacher evaluates the students’ responses. For this dimension, the observed interaction is between teachers and students. The third dimension is collaboration for proximal outcomes whereby researchers study collaboration by analyzing the group discourse and the group’s interactions. The fourth dimension is collaboration as
learning; researchers study the learning in groups, how the groups perform the task, and what their responses are.

Many studies about collaborative learning investigate types of collaboration that, in most cases, are associated with the use of technology in the learning process (Al-Rahmi & Zeki, 2017; Al-Samarraie & Saeed, 2018; Iglesias Rodríguez, García Riaza & Sánchez Gómez, 2017; Reychav & Wu, 2015), the quality of collaboration among students, issues emerging during collaborative learning, or situations of creating more effective collaboration (Isohätälä, Järvenoja & Järvelä, 2017; Järvenoja, Järvelä & Malmberg, 2017; Kulikovskikh, Prokhorov & Suchkova, 2017; Näykki, Järvelä, Kirschner & Järvenoja, 2014). Most of the studies have found positive effects in student learning outcomes through collaborative learning activities (Doumanis, Economou, Sim & Porter, 2019; Ibrahim et al., 2015; Laal & Ghodsi, 2012). Also, Aalst (2013) showed that collaborative learning, if well arranged, can help the learner to become an expert in learning how to learn.

For example, considering specific studies investigating the effects of collaborative learning, an empirical study that included 416 students instructed to complete a collaborative project in groups of 4–5 students, investigated the impact of interactions, social presence, and emotional engagement on active collaborative learning in the context of social web-based collaborative learning (Molinillo et al., 2018). At the end of the semester, the students were required to complete a questionnaire, the results of which showed that social presence and teacher–student interactions impacted student active collaborative learning, although student–student interactions were reported to have less influence on student’s learning (Molinillo et al., 2018). Additionally, a study conducted in a Nigerian university used a descriptive survey design in which a questionnaire was adopted to investigate the use of ICT facilities in enhancing collaborative learning, as well as problems encountered in the use of ICT facilities, while enhancing collaborative learning (Ezekoka, 2015). The researcher reported that ICT facilities increased the level of student participation in collaborative learning and provided the students with the flexibility to learn in more effective ways.

A systematic review by Van Leeuwen and Janssen (2019) reviewed 66 empirical quantitative and qualitative studies to investigate teacher guidance during collaborative learning in primary and secondary education. In their study, the researchers intended to identify which aspects of teacher guidance are the most beneficial for promoting successful collaboration with students. The results showed that feedback, prompting, questioning, and transferring control are effective strategies for student collaboration. In understanding the effect of collaborative
learning activities, the review study by Laal and Ghodsi (2012) concluded that collaborative learning led students to be actively involved in their own learning by assessing their own learning, interacting and supporting each other, and being ready to manage their learning and solve challenging tasks.

Miyake and Kirschner (2014), while discussing the social and interactive dimensions of collaborative learning, stressed the great importance of group learning. They determined that working and completing a task in a team is more effective than working individually because, in collaborative learning, an individual learns through the process of teamwork. Among the many aspects of the interactive dimensions of collaborative learning, they emphasized the importance of negotiation in team learning. Negotiation is the process of achieving agreement among participants. The process of building a shared concept of a problem happens when team members actively listen to and examine the ideas given by other team members in solving the task. They defined the concept of “construction,” in which team members listen carefully, and the concept of “co-construction,” in which information from one team member is complemented with information from other team members. Miyake and Kirschner (2014) also explained the importance of interaction in facilitating learning during collaboration.

Currently, most of the studies about collaborative learning investigate the integration of collaborative learning with modern educational technologies in small groups of students (Al-Samarraie & Saeed, 2018; Iglesias Rodríguez et al., 2017; Reychav & Wu, 2015). For example, a study that reviewed collaborative learning trends studies in the current literature found that, from 2005–2010, a total of 114 studies were conducted on technology-supported collaborative learning (Fu & Hwang, 2018). In this study, the teachers were investigated to see if they could use ALTTs based on collaborative learning activities in the teaching context where the class size is extremely large and where there are no educational technologies. Based on the context of this study, it was projected that, when teachers facilitate collaborative learning activities, this might support teaching in that context. Collaborative learning was selected for this study because, in collaborative learning, students work in small groups, and the use of small groups in a large class is often recommended as an effective teaching technique (Frederick, 1987).

### 3.3 Feedback

Feedback is the information provided regarding someone’s performance or understanding (Hattie & Timperley, 2007). This information can be provided by
any agent, such as a teacher or peer, to inform the receiver about whether the task has been effectively or ineffectively performed, what was good in the task performance, and what needed to be corrected for more effective performance or understanding. Feedback is also described as the response of a teacher to a student’s assessment, task, or performance (Bergil & Atlı, 2012). The topic of feedback has been widely explored by various scholars (Brookhart, 2008; Burnett & Mandel, 2010; Conroy, Sutherland, Snyder, Al-Hendawi & Vo, 2009; Ertmer, et al., 2007; Hattie & Gan, 2011; Hattie & Timperley, 2007). The common issues discussed in the literature about feedback in education settings consider the strategies, types, timing, and effects of feedback on students’ performance.

There are various strategies for using feedback that can make it effective. The most common one is giving either written or oral feedback (Brookhart, 2008). Through oral feedback, a student can receive oral information from a teacher on how well he is performing the task or what else is needed for a more effective performance. In the written format, a teacher writes information about the student’s work to describe how well the task has been performed or what is else needed for effective performance. Both oral and written feedback are important for student learning. However, written feedback may last as a reference, while oral feedback may disappear after it has been given. According to Brookhart (2008), effective written feedback should be specific, and teachers should be very cautious in the selection of the language used to provide the feedback to the student. In both forms, the most emphasized point is the quality of feedback information in enhancing students’ performance.

Ertmer et al. (2007) conducted a case study over the course of one semester to investigate the impact of peer feedback when used as an instructional strategy to increase the quality of students’ online postings. The study involved 15 participants who were experienced in the field of education. An online course was taught by a professor and an experienced graduate student in which the students met either face-to-face or through a video conference. Students were asked to post a response to the weekly discussion question and respond to another student’s post. Interviews and pre- and post-surveys were used to collect data about the students’ perceptions of the importance of various aspects of the feedback and peer feedback process. The researchers defined the quality of feedback based on the Bloom taxonomy levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. The results showed that the quality of students’ posting was maintained through the use of peer feedback, and students perceived peer feedback as a reinforcement of their learning, and this led to a better understanding.
Timing is also a crucial aspect that can make a difference in the outcome of feedback (Arbel, Baker & Holroyd, 2017; Brookhart, 2008; Hattie & Timperley, 2007; Iwaki, Nara & Tanaka, 2017; Kim & Arbel, 2019; Nakata, 2015). Research has reported different results on the effects of feedback timing on students’ learning. Some indicated that immediate feedback is more effective than delayed feedback (Kulik & Kulik, 1988), while others found delayed feedback to be effective in some situations (Kulhavy & Anderson, 1972). An experimental study by Mullet, Butler, Verdin, Von Borries, and Marsh (2014) was conducted to assess how the timing of the feedback affects learning in the classroom. The study involved 26 students to whom the instructors gave two lectures each week and assigned additional materials to be viewed outside the class. The students were asked to complete the homework and view the feedback at home in order to receive the credit. In the first experiments, some students received feedback immediately after the assignment deadline, while others received delayed feedback one week after the deadline. All students received the same feedback information. In the course examination, the students were asked to apply the knowledge from the feedback they received while doing their homework assignment to a novel problem. This was done to assess the students’ learning from the feedback. There was a survey to assess the students’ perceptions of the relative effectiveness of feedback and their preference on the optimal timing of feedback. In the second experiment students received immediate and delayed feedback to assess if there was a change of their perceptions on the delayed feedback after their experience of receiving both types of feedback. The results showed that students performed better in the exam that contained a new problem about the same concept when receiving delayed feedback; thus, the delayed feedback produced a superior application of knowledge; however, students noted that they had benefited most from immediate feedback.

Kulik and Kulik’s study (1988), which reviewed 53 quantitative studies about the effects of feedback timing, reported that most studies found immediate feedback to be more effective than delayed feedback. In their review, they included long-term applied studies which were carried out in real classrooms and with brief laboratory experiments. They argued that delayed feedback may be better than immediate feedback only in special experimental conditions, as illustrated in Kulhavy and Anderson’s preservation-interference theory (1972). Preservation theory states that, when a correct response is given immediately after the wrong response, there may be an interference between the wrong and correct responses, and one may fail to learn the correct response. However, if there is a time interval between the correct response after the wrong one, the delayed time interval
provides time for the wrong answer to fade and thus provides a chance to learn the new response.

In investigating the effect of feedback, some studies mentioned the effects of direct feedback and indirect feedback. Direct feedback is used for the information that clearly shows students what is needed to be done to improve the task. For example, the teacher can show directly the correct spelling or the correct grammatical sentence, such as by writing on a student’s paper “She has a pen.” instead of the student’s sentence “She have a pen.” Indirect feedback describes information related to the areas that need to be improved in the task but do not directly show the correct answer. For example, a teacher may simply underline the sentence that is incorrect. Farid and Samad (2012) conducted a quantitative study that used an experimental design to investigate the effects of different kinds of feedback on students’ writing. The researchers used three groups of upper intermediate students, who were given different kinds of feedback, which were differentiated as direct feedback with written meta-linguistic explanation, direct feedback with oral meta-linguistic explanation, and direct feedback only. The findings indicated that all kinds of direct feedback are effective in improving students’ writing, although at different levels. A similar study, which also investigated the effect of direct and indirect feedback on students’ writing, found that the use of indirect feedback was more effective in improving writing than direct feedback (Jamalinesari et al., 2015). In their investigation, two classes were assigned an essay to write as their homework in 10 consecutive lessons. Then, the teachers gave direct feedback to one class and indirect feedback to another class, and the students were asked to resubmit their revised versions. The students who received indirect feedback were reported to have shown better improvement in their writing than those who received direct feedback.

A study investigating the impact of interactional feedback to students reported positive effects of interactional feedback on students’ motivation and performance (Abdollahifam, 2014). According to the researcher, interactional feedback involves communication and exchanging ideas between a teacher and a student in performing the task. The researcher used an experiment to study two groups of students given a writing task. The groups were to receive different kinds of feedback. The control group received corrective feedback on form and organizational structure, and the experimental group received additional information about the ideas involved in the writing and the teacher’s personal ideas about the topic. Interactive feedback was found to have positive effects on student
motivation and efficacy in the experimental group which involved more interactions between the teacher and students during feedback.

The study by Burnett and Mandel (2010), which investigated students and teachers’ perspectives on praise and feedback, found that 57% of their participants preferred effort feedback over ability feedback. They described ability feedback as that which addresses the students’ ability to achieve the task or learning, for example, “You are very clever in reading,” while effort feedback demonstrates students’ effort on the task or learning, such as “You have been working hard on your reading.” Although these types of feedback are important to be known by teachers, Hattie and Timperley (2007) argued that they do not guide students on how to improve the task, and so have less effect on the student’s achievement.

A quasi-experimental study conducted over two weeks to investigate the effects of feedback on collaborative writing in an online learning environment referred to four types of feedback: corrective feedback, epistemic feedback, suggestive feedback, and epistemic and suggestive feedback (Guasch, Espasa, Alvarez & Kirschner, 2013). Corrective feedback is defined as the kind of feedback that gives comments about the requirements of the assignment, while epistemic feedback requests an explanation in a critical way. Suggestive feedback provides advice of how to proceed on the task, and epistemic and suggestive feedback gives information on both: advice and how to proceed with the task in a critical way. The participants in Guasch et al.’s study which involved 201 students and one teacher with substantial experience in online teaching and with the module used in the experiment, were asked to write an essay in three phases. The first one was an individual writing to determine the student’s initial writing ability, the second one was collaborative writing as an intervention, and the third one was also an individual writing that was compared with the first writing to determine if a qualitative change had occurred in the student’s essay writing. The participants were randomly assigned to eight groups which received different kinds of feedback (corrective, epistemic, suggestive, and epistemic and suggestive). All groups received teacher feedback and half gave and received peer feedback. The results showed that the quality of collaborative writing performance was best improved by epistemic feedback or epistemic and suggestive feedback.

In investigating the effect of feedback on students’ progress, a review conducted by Hattie and Timperley (2007) showed the varying effects of different levels of feedback. They defined four levels of feedback, and each level had different effects on student learning. The first one was feedback at the task level (FT), which focused on how well the task was being accomplished. The second one
was feedback at the process level (FP), which detected errors and led students to choose different strategies or be more effective in applying strategies. The third one was feedback at the self-regulation level (FR) which required more effective students who could assess themselves. This led to further engagement with the task and to enhanced self-efficacy. The last level was the feedback about the self as a person (FS), which provided direct personal praise that showed the person was intelligent, clever, or hardworking but did not show how or why. This feedback was found to be ineffective in learning, as it did not contribute to the task performance or progress in learning. Hattie and Timperley also addressed three aspects of feedback: feed up, feedback, and feed forward. According to Hattie and Timperley, feed up is the information that clarifies the goal to be achieved, such as what students are meant to attain: writing, reading, singing, or any other learning goal. Through this information, students can understand where they are going. Feedback is the information that students use to understand and evaluate their performance, such as how they are progressing in the task and what successes and failures they experience in the effort to achieve their goal. Thus, they get to know how they are progressing toward their goal. Feed forward is the information that the receiver gains on what is needed to succeed, in terms of effort, tasks, and strategies that can be further applied to accomplish a goal. All of these strategies work together to make the feedback information powerful for students’ learning.

Generally, feedback has been reported to produce positive effects on student learning (Cutumisu & Schwartz, 2018; Farid & Samad, 2012; Jamalinesari et al., 2015), and found to be among the most powerful teaching techniques (Brookhart, 2008; Hattie & Timperley, 2007). Conroy et al. (2009) argued that, effectively used in school or class, feedback is a powerful tool that can foster interactions and students’ academic progress, as well as regulating their behavior. Thus, through feedback information, learners can be actively engaged in evaluating their own performance (Hattie & Gan, 2011).

When considering feedback in the classroom context, we also must specifically address the relationship between teaching and learning. This means that feedback, as an aspect of improving students learning, needs to be accompanied by effective teaching instructions. As Hattie and Timperley (2007) asserted, “feedback has no effect in a vacuum. To be powerful in its effect, there must be a learning context to which feedback is addressed” (p. 82). Thus, feedback in the context of teaching is not merely information on how to perform the task; rather it is the information that is incorporated with teaching instructions. In this way, teachers are important agents who can give or facilitate effective feedback. Studies have indicated that teachers
play an important role as feedback providers in the classroom (Abdollahifam, 2014; Farid & Samad, 2012). It has also been explained that, in active learning (Eison, 2010) and collaborative learning (Golbeck & El-Moslimany, 2013; Van Leeuwen & Janssen, 2019), students learn better when they receive feedback from their peers. Thus, the teacher’s role in giving feedback is not only for him to give feedback to students but to facilitate and guide students in giving and receiving feedback among themselves for their own learning. Hattie (2012) argued that, among the different aspects, visible teaching and learning are also influenced by effective feedback. Giving effective feedback can lead to visible teaching, and receiving the feedback effectively can lead to visible learning.

In this study, teachers were trained to give and facilitate effective feedback while supporting students working in collaborative groups. Thus, feedback was discussed as an ALTT incorporated in collaborative learning activities to support teachers’ practices in their context. Consequently, while investigating the teachers’ ALTTs, the teachers were also closely observed to determine if they gave feedback or facilitated students in giving and receiving feedback in the TLCC.

3.4 Teacher training

The literature shows the role of teacher training in the process of teaching and learning (Balbay et al., 2018; Çer & Solak, 2018; Solak, 2016; Tondeur et al., 2018). Without effective training, teachers may encounter different challenges with respect to their knowledge and practices (Fenwick & Cooper, 2013). Teachers need training to be prepared for the job. This means pre-service training, in which student teachers study at TTCs to learn the professional aspects of teaching. Teachers need training in aspects of pedagogy such as how to teach, how to interact with students, how to manage the class, how to deal with different kinds of students, how to assess students, and how to facilitate the learning of students. Additionally, training on the content to be taught or subject matter is crucial. Apart from understanding different ways to be a professional teacher in terms of pedagogical aspects, teachers also need to have a deep understanding of the subject they are teaching. They need to understand the scope of the content that is required for the students according to the curriculum. These factors all require training before a teacher is employed. However, pre-service training is not enough to keep teachers updated. Because educational knowledge is constantly growing, teachers also need in-service training. There are new skills, pedagogies, theories, and concepts that are constantly being discovered. Thus, teachers need to upgrade their knowledge and skills through in-
service training. For example, teachers need to have knowledge and skills in emerging educational technologies, as well as pedagogical concepts and theories, that might not have been taught in pre-service training. Effective teachers continue their own learning in order to understand how to help their students learn.

In showing the importance of teacher training, Okpe and Onjewu (2016) conducted a study to investigate the effects of the abolition of TTCs on English language teaching in Nigeria. The study specifically investigated the performance of the trained English language teachers and those who were not trained and the outcome of their performances. They used interviews and collected data from 100 English language teachers. The results, among other things, showed that the teachers who had gone through TTCs produced better students and showed more commitment to their responsibilities. Additionally, the trained teachers were found to be more sensitive to learners’ needs.

A study by Copriady, Zulnaidi, and Alimin (2018) was conducted to determine the effect of in-service training, collaboration, and teacher proficiency on the teaching of the subject of chemistry based on teaching experience. The study involved 184 chemistry teachers of which 64 had less than 10 years of teaching experience. In their study, they used questionnaires to collect teachers’ perceptions on in-service training, collaboration, and teacher proficiency. The results indicated that the teachers required in-service training to enhance their proficiency. The difference was that chemistry teachers with less teaching experience required additional in-service training and collaboration, while experienced teachers only required in-service training. These results showed the importance of in-service training for both experienced and less experienced teachers.

A qualitative study by Çer and Solak (2018) used document analysis to investigate the teacher training process in Singapore, Shanghai, Hong Kong, and Turkey. The aim was to discover the reasons for success in the Program for International Student Assessment (PISA) by relating it with teacher training processes. The analyzed data were about the teacher training process in those cities and countries. The results of the study suggested practical improvements that could be made to low-performing education systems, such as reconsidering the allocation of the time, content, and methods used for in-service training, and the selection of the priority of teacher’s knowledge to be emphasized in pre-service training.

The importance of teacher training is evidenced by the existence and ongoing efforts of the EFA global movement, which states that “no education reform is going to succeed without the active participation of teachers” (MoEVT, 2006, p. 43). It is argued that, when the goal is to improve student learning, teacher
development becomes the key aspect to achieve that goal (Fishman et al., 2014). In this study, the teachers the participating teachers received pedagogical training as a way of supporting and developing their ALTs in their TLCC.

3.5 Teachers’ knowledge and practices: Meaning, aspects and relationship

There is no single description of what comprises a teacher’s knowledge; however, different models have been developed to explain its various facets (Fernandez, 2014; Morine-Dershimer & Kent, 1999; Rollnick, Bennett, Rhemtula & Ndlove, 2008; Shulman, 1986, 1987). For example, in Grosman’s model of teacher’s knowledge (1990), the aspects of teachers’ knowledge are described as general pedagogical knowledge, pedagogical content knowledge, and educational context knowledge, which are all linked to pedagogical content knowledge. Shulman (1986, 1987) defines the facets of teacher’s knowledge as content knowledge, general pedagogical knowledge, pedagogical content knowledge, curriculum knowledge, knowledge of learners and their characteristics, knowledge of educational context, and knowledge of educational purposes and values, as well as their philosophical and historical bases. Teachers’ knowledge is also described as the integration of technology, pedagogy, and content which is commonly known as technological pedagogical content knowledge (TPACK) (Mishra & Koehler, 2006). The common features of all these models are the facets of pedagogical and content knowledge.

To understand more deeply what comprises teachers’ knowledge, Ben-Peretz (2011) reviewed nine papers from the journal of Teaching and Teacher Education to uncover the concept of teachers’ knowledge and the methodology used to study the concept from 1988–2009. The paper by Ben-Peretz shows that the concept of teachers’ knowledge develops by starting with knowledge of subject matter, curriculum, and pedagogical content and progressing to the knowledge related to global issues and multiculturalism (Ben-Peretz, 2011). Considering the different models of teachers’ knowledge (Fernandez, 2014; Morine-Dershimer & Kent, 1999; Rollnick et al., 2008; Shulman, 1986, 1987) and the review article by Ben-Peretz (2011), it is clear that no definition of teachers’ knowledge can leave out the aspects of general pedagogical knowledge and pedagogical content knowledge. General pedagogical knowledge is associated with student learning, classroom management, and curriculum instruction (Grossman, 1990). Pedagogical content knowledge is linked with knowledge of students’ understanding and curricular instructional strategies (Grossman, 1990). The purpose of this sub-chapter is not to review the
models of teachers’ knowledge but to explain, according to studies, what examples of knowledge, especially those related to aspects of general pedagogical knowledge and pedagogical content knowledge, a teacher is expected to have. Based on those studies, teachers’ knowledge will be explained in terms of their understanding of: general and specific teaching instructions, learners, classroom context, and teaching materials.

Teachers need knowledge about instructional models and strategies. In most studies about teachers’ knowledge, this is mentioned as general pedagogical knowledge (Carlsen, 1999; Grossman, 1999; Morine-Dershimer & Kent, 1999). Thus, teachers need to understand different kinds of instructional strategies that are available and how to use them in their teaching. In investigating what makes great teaching, the quality of instruction leading to positive student outcomes has been reported as having strong research evidence (Coe, Aloisi, Higgins & Major, 2014). The research on learning and instruction has shown that a variety of instructional methods are believed to support student learning and that it is important that they be understood by teachers. These include instruction based on cooperative learning (Slavin, 2011), feedback (Hattie & Gan, 2011), discussion (Murphy, Wilkinson & Soter, 2011), and inquiry (Loyens & Rikers, 2011).

When these instructional methods are used in a specific subject, the teacher is expected to understand, for example, how to use those methods and strategies for a specific subject and topic and which kind of instruction is best for each individual subject. For example, it is essential to know how different topics are taught and presented in a particular subject; the best relevant examples, illustrations, and demonstrations; the simplest way to make students understand the topic; the common difficulties in understanding a certain topic; how to ask students effective questions about a specific subject or topic; and what student assessments and other tools can facilitate teaching and understanding of a specific subject and topic. Thus, it is not enough for teachers to understand a single instructional method; rather, there is a need for them to be competent in using those various teaching techniques in their particular subjects. Research on learning has shown that there are differences in teaching different subjects; for example, there are special instructional methods needed to teach reading (Barr, 2001; Fox & Alexander, 2011), mathematics (Edwards, Esmonde & Wagner, 2011), second language (Wang, 2011), and history (Levstik, 2011), science (Duschl & Hamilton, 2011), among other subjects. When the knowledge of teaching instructions is associated with a specific subject, it is called pedagogical content knowledge (Moriner-Dershimer & Kent, 1999; Shulman, 1986; Rollnick et al., 2008). Pedagogical content knowledge has
also been reported to have strong evidence as to its impact on students’ learning (Coe et al., 2014).

Teachers’ knowledge is also explained in their understanding of learners and learning. This includes understanding different kinds of learners, levels of learner understanding, learners’ development and difficulties, the support needed for each learner, and how to help students learn effectively. Teachers are also expected to understand how well they can assess student learning. Teachers’ knowledge of learners is crucial because, without this knowledge, it is even more difficult to use the instructional methods effectively. The focus of the learning sciences is helping and supporting learners in their learning process. This support is investigated to determine the best examples of effective learning through studying learning methods (Krajcik & Shin, 2014; Lu, Bridges & Hmelo-Silver, 2014) or designing ones to foster learners’ interest, motivation, and engagement (Järvelä & Renninger, 2014). The knowledge of learners and learning is found in different facets of teachers’ knowledge, but mostly in general pedagogical knowledge (Carlsen, 1999; Grossman, 1999) and sometimes in pedagogical content knowledge (Moriner-Dershimer & Kent, 1999; Rollnick et al., 2008).

Teachers’ knowledge is also assessed in their understanding of classroom context or environment, communication and discourse, and classroom management and organization. In some models of teachers’ knowledge, teachers’ understanding of classroom communication, management, and organization is considered as part of general pedagogical knowledge (Carlsen, 1999; Grossman; 1999, Morine-Dershimer & Kent; 1999). Studies have shown that an appropriate classroom environment impacts student learning (Coe et al., 2014; Koki, 2000; Lai, Chou, Wei-Lun & Jiunn-Chern, 2015; Poondej & Lerdpornkulrat, 2016). In this facet of teachers’ knowledge, teachers are expected to understand how well they can communicate with students and how to organize the class to make it suitable and welcoming for teaching and learning (Brame, 2019). Also, teachers need to understand the opportunities and challenges found in their teaching context to determine the appropriate support for student learning. The effect of the classroom environment can be through psychological factors, such as motivation, interaction, and recognition (Brame, 2019) or through interest and engagement (Järvelä & Renninger, 2014), and physical factors, such as seating arrangement, light, and materials (Ramli, Ahmad & Masri, 2013). Knowledge about classroom context or environment helps teachers to decide how to best support or plan for effective teaching with the least negative effects from the context they are facing. Lack of this knowledge may cause chaos in the classroom and be a reason for ineffective
teaching and learning. It has been reported in the research that classroom climate and management have a moderate impact on student outcomes (Coe et al., 2014).

Teachers’ knowledge is also associated with teachers’ understanding of instructional materials, texts, software, videos, films, laboratories, computers, and tools that can facilitate understanding of the topic. For Shulman (1986, 1987), this is what defines curriculum knowledge. Understanding the importance of instructional materials and the ability to use them can make a difference in learning. It has been shown in studies that the use of these resources can facilitate learning (Adesote & Fatoki, 2013; Ezekoka, 2015; Shieh, 2012). Even teachers’ knowledge of teaching methods can be more effective with the support of teaching and learning resources, especially educational technology. For example, studies on collaborative learning have shown how effective collaboration is facilitated through the use of technology (Chuang, 2015).

When showing the connection between teachers’ knowledge and their teaching practices, it is assumed that, when teachers have the required knowledge, their teaching practices will be effective. The important thing in teachers’ knowledge is how that knowledge is expressed in teaching (Connelly et al., 1997). In many studies, teachers’ knowledge has been found to affect their classroom practices, as their instruction can be very much influenced by their knowledge of teaching practice or subject content (Alisaari & Heikkola, 2017; Blömeke, Busse, Kaiser, König & Suhl, 2016; Chapoo et al., 2014; Kleickmann et al., 2015; Mansor et al., 2010; Sadler, Sonnert, Coyle, Cook-Smith & Miller, 2013). For example, a study that used questionnaires and classroom observations to collect data from 164 Chinese kindergarten teachers investigated the teachers’ knowledge and their practice of teacher–child interactions (Hu, Fan, Yang & Neitzel, 2017). The study found a significant association between teachers’ knowledge and instructional practices.

In discerning the influence of a teacher’s knowledge on classroom practice, a study that investigated teachers’ understanding and practices of pedagogical content knowledge in Thailand found that teachers lacked adequate knowledge in the subject they taught (biology) and that this affected their ability to design appropriate instructional and assessment activities (Chapoo et al., 2014). This shows that teachers’ knowledge of what they teach can help them design effective classroom practices and that their lack in this knowledge is a hinderance for designing effective instructional activities. However, the study by Boesdorfer (2012), which used a questionnaire, interviews, and class documents to investigate the influence of pedagogical content knowledge on teaching practice, found that
teachers’ knowledge and their enacted knowledge did not correspond. In this study, the author recommended more observations to better understand the influence of teachers’ knowledge about the subject on teaching practices.

Accordingly, it can be concluded that the concepts of teachers’ knowledge and their practice consist of every facet that teachers need to know to help students to learn. Most of the studies about teachers’ knowledge and practices have investigated specific kinds of teachers’ knowledge and their effects on classroom teaching (Blömeke et al., 2016; Chapoo et al., 2014; Kleickmann et al., 2015; Mansor et al., 2010). This study was different from the previous one in terms of the context. The teachers whose knowledge and practices were investigated in this study were working in a TLCC. Thus, what the teachers themselves explained as what they know about their teaching and what they practiced in the real classroom context was expected to reveal an important practical lesson in the field of teaching and education in general.

3.6 Teacher’s role in the teaching and learning process

Different studies have shown the important role played by teachers in student learning (Bonwell & Eison, 1991; Niemi, 2002). Teachers can be facilitators, instructors, guides, supporters, motivators, or tutors. For example, the study by Ariffin, Bush, and Nordin (2018) investigated the roles and responsibilities of excellent teachers in Malaysia. The study used semi-structured interview data which was triangulated with documents published by the Ministry of Education of Malaysia showing official expectations of excellent teachers. The participants were 16 excellent teachers from different schools. The results revealed that excellent teachers described their roles as teacher, content expert, facilitator, mentor, and innovator.

The role of teachers as facilitators has been shown even in active learning studies. For example, the techniques of grouping students, assigning them a task, organizing their discussion, debate, collaboration, and feedback, all need to be facilitated by teachers (Bonwell & Eison, 1991). Eison (2010), for example, stated what teachers are supposed to do as active learning facilitators is prepare student activities, facilitate their thinking and their speaking in a small group or class, and activate them to express their ideas through writing, giving and receiving feedback, and reflecting on the learning process. Bransford, Brown, and Cocking (2000) also depicted some additional roles that teachers can play in facilitating active learning. They stressed that teachers are supposed to use and work with students’ experiences,
instead of assuming them to be “empty vessels,” and integrate teaching with metacognition activities to develop independent learning among students. This all shows that teachers have the role of guiding students to use their minds in learning. Additionally, the teacher’s role is to facilitate all students’ participation and involvement in learning. For example, Felder and Brent (2009), while outlining the role of a teacher in active learning, asserted that, as a teacher, you are “... not doing active learning when you lecture or ask questions that the same few students always answer or conduct discussions that engage only a small fraction of the class” (p. 2). Teachers should ensure that truly active learning is taking place for all students in the class. Thus, teachers’ various roles in the classroom are described as crucial aspects that can create or destroy active learning depending on how these roles are played.

A study by Niemi (2002) was conducted to evaluate how teacher education may promote active learning and investigate the obstacles to reaching that target. Niemi used a questionnaire with a Likert scale and open questions with active learning principles. The study involved student teachers, teacher educators, teachers, and pupils in schools. In the study, 204 elementary and secondary school teachers and 63 teacher educators responded to the questionnaire. Eleven schoolteachers and 80 students were interviewed, and 68 lessons were observed. The study showed that the role of a teacher in facilitating active learning is not only achieved through the classroom activities and that the teacher also needs to have the required skills to work with different stakeholders to promote active learning. To Niemi, this represents a new role for the teacher. Niemi also pointed out that teachers are supposed to provide substantial support to students so as to facilitate their active learning.

To stress the roles of teachers, Hattie (2003) argued that teachers make changes because of the many roles they play in the class. Hattie asserted that, although many of the things done in education have positive effects on student achievement, it is very wise to pay more attention to those “attributes that have a marked and meaningful effect on students’ learning” (p. 4). Examples of these attributes are feedback, instructional quality, direct instruction, teacher style, questioning, and others. Among 33 influences to learning enumerated by Hattie, 21 influences are directly related to the teachers, while the remaining 12 influences are related to other sources such as the school, peers, students, and home environments. Thus, the role of a teacher is crucial in bringing about change to learning. However, Hattie warned that this does not happen for every teacher; instead, it applies to those teachers who are excellent. Thus, it is the excellence of teachers in performing their
duties that can bring changes to students. He asserted that “there are differences of performance between students who are taught by expert teachers and experienced teachers” (p. 18).

A review of the literature was conducted to determine the role of a teacher in promoting inquiry-based education (Dobber, Zwart, Tanis & Van Oers, 2017). The researchers examined 186 empirical studies that investigated different ways that teachers can foster inquiry-based education. The results showed that, in metacognitive regulation, teachers develop a culture of inquiry, supporting inquiry discourse and promoting the nature of science. The teachers’ role was also reported as providing information on the research topic and focusing on conceptual understanding. Additionally, the teachers’ role in promoting inquiry-based education was also found in bridging the gap between high and low achievers, organizing student learning in groups, and focusing on collaboration processes. Although the study focused on the teachers’ role in promoting inquiry-based learning, the results indicated different roles that teachers have in promoting student learning, including supporter, developer, organizer, promoter, and motivator.

Due to the importance of the teacher’s role, it is all more critical to help teachers improve their expertise in contexts where learning is faced with various challenges. It is through this emphasis on the teachers’ role that this study conducted training for teachers to equip them with knowledge and skills of active learning, collaborative learning, and feedback activities to support the ALTTs in a TLCC.

3.7 Teaching and learning challenging context (TLCC)

In this dissertation, a TLCC relates to aspects in the classroom context that hinder effective teaching and learning. When the classroom context is conducive to teaching and learning, it can arouse students’ interest and motivate them to learn (Entwistle, 2018). It has been found that interest, motivation, and engagement in learning are the products of interaction of people or learners with their environment, such as interaction with the classroom, books, video games, or peers (Järvelä & Renninger, 2014). Studies have identified many aspects that are either challenges or contributions to the challenging context of teaching and learning. Some of those aspects are class size (Breton, 2014; Brühwiler & Blatchford, 2011), lack of or insufficient educational technology or teaching resources (Ezekoka, 2015), and classroom infrastructure (Ezekoka, 2015). In this sub-chapter, class size and
teaching resources will be discussed, as they are relevant to the problem of this research and the context wherein the participants in this study were working.

### 3.7.1 Class size

Class size as a factor affecting teaching and learning context has been investigated for a very long time, and so there are many studies on the topic (Bandiera et al., 2010; Banhashal, 2013; Blatchford, 2018; Cheng, 2011; Galton & Pell, 2012; Hattie, 2005; Jones, 2016). In most of the studies, a large class size is considered to be 30–40 students (Galton & Pell, 2012). A study that investigated the effects of class size on reading achievement in eight European countries (Bulgaria, Germany, Hungary, Italy, Lithuania, Romania, Slovakia, and Slovenia) showed that the maximum class size in those countries until 2011 was from 24–29 students per class (Shen & Konstantopoulos, 2017). A UNESCO article (2006) indicated that the definition of a large class depends on the country; in some countries, a teacher with a class of 30 students is considered lucky, while in other countries, this number is considered a crowded class. The UNESCO article concluded that a class of more than 50 students should be considered large in any context.

Other studies have investigated if class size has any effect on teaching and learning. Most of them investigated the effects of large classes on student learning, teaching, student–teacher interaction, and class management (Podmore, 1998; Shen & Konstantopoulos, 2017). Some of these studies on class size reported different results, with some indicating a relationship between increasing class size and students’ progress (Breton, 2014; Brühwiler & Blatchford, 2011) and some showing few or no effects of class size on the teaching and learning processes (Cakmak, 2009; Galton & Pell, 2012; Shen & Konstantopoulos, 2017). The study by Yelkpieri, Namale, Esia-Donkoh, and Oforu-Dwamena (2012) is an example of a study that reported different findings about the effects of large class size on effective teaching and learning. Their study, which used questionnaires and observations, found that lecturers disagreed that large class size affected the quality of their teaching and that it made student assessment difficult. However, in the same study, students’ results indicated that large class provided little opportunity for lecturers to pay attention to weaker students, thus affecting students’ progress.

In a study conducted in Kenya, a developing country like Tanzania, the researchers used interviews, questionnaires, and classroom observations to examine teachers and principals’ perceptions of their capacities to teach in large classes (Ndethiu et al., 2017). In the context of Ndethiu et al.’s study, a large class
was considered a class of 40–59 students in public secondary schools. The results showed that large class size had negative impact on teaching and learning.

Some studies have found no impact of class size on student performance. For example, a quantitative study conducted in Seoul, South Korea, found that high school class sizes had very little effect on test scores (Han & Ryu, 2017). Han and Ryu’s study used an administrative large-scale data set collected for a class size reduction policy study implemented in Korea in 2002. The analyzed data came from two sources. The first was information about the individual test takers and their scores, including gender and school name. This information was from a scholastic ability test that is administered once a year and that is described as an important test in determining college admission in Korea. The second source of data was school-level information, which contained details about the number of classes, students in each grade, teachers, and geographical locations. Based on their results, Han and Ryu (2017) concluded that among the many aspects that they analyzed, class size reduction was seen to have very little effect on higher students’ test scores.

The previously mentioned study by Shen and Konstantopoulos (2017) found that there were no significant relationships between class size and reading achievement. This study used data from the Progress in International Reading Literacy Study (PIRLS) to examine the effects of class size on reading achievement of fourth graders in eight European countries. The overall results indicated that class size effects on reading achievement are not significant across countries and years. For example, the results in Germany showed that an increase in class size was associated with an increase in reading achievement, while, in Romania, a decrease in class size was associated with an increase in reading achievement.

Surprising findings about the effects of large class size were reported in a study conducted by Denny and Oppedisano (2013) who investigated the effects of class size on educational attainment. Their study used PISA data collected in 2003 in the United States and the United Kingdom. The surprising results were found for the United Kingdom where increases in class size led to improvements in students’ mathematics scores.

It can be concluded that, although a substantial number of studies indicate negative effects of large class size on students’ performance, there are also studies showing no or few effects. However, the need for this study is particularly important due to the difference in the notion of “large class size” as defined in most studies and the one meant in the context of this study. While in the literature, a large class size consists of 30 or even 50 students, according to UNESCO’s definition,
in the context of this study, the class size reached 70–120 students. In this study, the aim was to help teachers develop their classroom practices by applying ALTTs in a such large classes.

3.7.2 Teaching and learning resources

Teaching and learning resources, such as learning materials and educational technology, can support teaching and learning. These include textbooks, whiteboards, models, projectors, computers, tablets, and televisions, among other resources. It has been reported in many studies that the use of different technologies can facilitate teaching and learning (Adesote & Fatoki, 2013; Bilyalova, 2017; Ezekoka, 2015; Shieh, 2012). For example, the learning sciences strongly stress the importance of using technology to facilitate learning (Sawyer, 2014; Sharple & Pea, 2014; Stahl, Koschmann & Suthers, 2014). Sawyer (2014) believes that appropriate social and technological environments lead to active learning. Shulman (1986, 1987) also counts teachers’ understanding and use of teaching and learning resources as a factor observed when assessing teachers’ knowledge. Additionally, the impact of different learning approaches becomes stronger when they are accompanied with teaching and learning resources. For example, some studies on active learning suggest the use of teaching resources such as charts, matrices, flowcharts, models, student-created charts, and clickers to facilitate active learning (Braxton et al., 2008; Martyn, 2007; Prince, 2004). Also, many studies on collaborative learning have shown the effectiveness of using technology in supporting collaborative learning activities (Al-Samarraie & Saeed, 2018; Iglesias Rodríguez et al., 2017; Reychav & Wu, 2015).

In investigating the importance of teaching resources, a study by Ezekoka (2015) investigated the use of different kinds of ICT-enhanced collaborative learning and found that insufficient access to technology posed a problem in improving active learning in students. The researchers described some causes of these problems, such as inadequate supply of electricity, inadequate ICT skills of students and lecturers, poor infrastructure, limited access, and overpopulation of students. Most of these problems apply to Zanzibar schools—the context of this study—as mentioned in the Zanzibar education policy (MoEVT, 2006). In exploring the effect of technology on teaching and learning, one study, which examined the role of ICT in teaching and learning in secondary schools, reported that the appropriate use of technology can influence teaching and learning practices in the subject of history (Adesote & Fatoki, 2013). The researchers argued that the
use of technology can provide additional strategies to address educational challenges faced by teachers and students. However, Adesote and Fatoki (2013) also asserted that the use of technology, which seemed to have led to a positive impact on teaching and learning in most developed countries, is still in its infancy or not implemented at all in developing countries. The scarcity or lack of these resources in the context of this study has definitely added to the challenges of teaching and learning.

In summary, this study was not intended to explore the impact of educational technology in facilitating students in active learning. However, it was assumed that, if teachers manage to use ALTTs without complex educational technology, it will help them face the challenges of their real teaching practices and so realize that their teaching activities themselves can support their context. In other words, the decision to not use educational technology in this study was intentional, to help teachers perform activities that are applicable in their real teaching practices, where these kinds of technology are not available.

3.8 A summary of theoretical background and the key concepts

This study was aimed at helping teachers apply ALTTs in their TLCC. The reviewed studies in this chapter have shown the important role that teachers play in facilitating active learning. It has also been shown the need for teachers to have adequate knowledge related to the teaching and learning process to support their classroom activities. According to the reviewed studies, teachers can practice effectively when they translate their knowledge into classroom practice. In regard to this study, it was also assumed that the application of ALTTs depends on teachers’ knowledge and how they can practice in their classrooms. On the other side, the reviewed studies have shown that activities related to giving and receiving feedback and collaborative learning lead to improved learning. Based on the effectiveness of training in boosting teachers’ classroom practice, the teachers in this study were trained to equip them with the knowledge and skills of active learning, collaborative learning, and feedback to support their ALTTs. In addition, the reviewed studies have shown that the presence or absence of some environmental conditions, such as large class size and educational technologies, may or may not affect teaching and learning process. As this study was conducted in TLCC, they helped shed light on the connection between active learning and the key concepts used in this study. Figure 4 provides an overview of the interrelation of active learning and these key concepts.
Figure 4 illustrates how active learning teaching techniques (ALTTs) are associated with active learning, collaborative learning, and feedback activities. All of these techniques are performed in the teaching and learning challenging context (TLCC) of large classes with a scarcity of teaching and learning resources. The concept of teachers’ knowledge and practices is linked with all aspects as they play an important role in the application of ALTTs. However, teacher training and teachers’ role must be available for effective teaching.
4  Aim and research questions

This study investigated teachers’ knowledge and practices in large classes with a shortage of teaching and learning resources in Zanzibar public schools. The aim was to support teachers’ development of ALTTs in a TLCC. The following three objectives were formulated to guide and achieve the aim of this study. The objectives were (1) to understand the teachers’ knowledge and activities of their daily teaching practices, (2) to help the teachers develop their ALTTs by using collaborative learning activities and feedback production, and (3) to examine the teachers’ and students’ perceptions of teaching and learning supported by collaborative learning activities and feedback in their particular contexts. Following the aim and objectives of this study, three research questions were constructed to direct data collection and analysis, namely:

1. What are the teachers’ knowledge and activities in their daily teaching practices in a TLCC?
2. What ALTTs did the teachers use before and after receiving training in active learning, collaborative learning, and feedback?
3. What were the teachers’ and students’ perceptions of teaching and learning before and after using collaborative learning activities and feedback in respect to developing ALTTs in their context?
5 Methodology

This chapter presents the methodological grounding applied in this study. It starts by describing the philosophical framework of the study, its research design, its participants and the context, and its data collection methods and process. The chapter also describes the general analysis approach applied in this study and the description of the analysis process for each data source. Finally, the chapter ends by describing the evaluation of the research and relevant ethical issues.

This study is grounded in the pragmatism research paradigm. Pragmatism is a worldwide view concerned with the application of what actually works and the solutions to real problems. Under this approach, the researcher emphasizes the research problem and uses the available approach to understand the problem (Creswell, 2014; Savin-Baden & Major, 2013). This study fits the pragmatic approach, as it focused on the understanding of the problem and finding a possible solution to solve the problem according to the context. In this study, the problem was the ability of the teachers to teach in large classes with a scarcity of educational resources. Different data collection methods were applied to gain a deep understanding of the situation and help to solve the problem. By applying different sources of data collection, such as video observations, interviews, and an open-ended questionnaire, the problem was understood, and pedagogical support for the teachers was considered as a practical solution to improve teachers’ ability to work in their TLCC. Although the pragmatic approach gives the researcher the freedom to apply a mixed-method design (i.e., a mix of qualitative and quantitative designs), this study only used the qualitative design, paying close attention to the researcher’s experiences. The qualitative data collection methods helped provide detailed description that was very important in understanding and solving the problem.

Qualitative research design

Qualitative design provides a comprehensive description of the research topic, including participants’ experiences, processes, activities, and settings (Silverman, 2016; Taylor, Bogdan & DeVault, 2016). Qualitative design can use case studies, a design of inquiry in which a researcher can develop an in-depth analysis of different aspects of a single instance, including activities or processes, by collecting information using various data collection methods (Creswell, 20014; Yin, 2014). This research was a qualitative study that used a case study of the Zanzibar context to address and study the specific problem related to teaching in that context. The
main justification for choosing a qualitative approach is due to the aim of this study, which intended to support teachers’ development of ALTTs in a TLCC. This aim was achieved by investigating participants’ knowledge and practices and gaining understanding of their knowledge and practice through their activities, opinions, and views. The descriptive methods of data collection and analysis used in this study were considered to be very useful for clearly describing the problem and proposing a workable solution. Thus, this study drew upon the concepts of Bogdan and Biklen (2007), who argued that qualitative research is suitable for the purpose of generating knowledge and understanding of the situation. In addition, Wiersma (2005) has asserted that qualitative design is a relevant research approach if the researcher intends to describe the situation in the classroom or observe the teachers. This research studied the teaching process in two Zanzibar public schools, where video observations of classroom lessons, teachers’ interviews, and open-ended questionnaires for teachers and students were used as methods of data collection to help gain detailed information about the process. Thus, to understand teaching practices in Zanzibar and propose a possible solution to the problems found therein, a qualitative design was considered to be the appropriate method for this study.

5.1 Participants and context

This study took place in two Zanzibar urban public schools during a four-month period from April to July of 2015. In most Zanzibar schools, inadequate and insufficient teaching materials and overcrowded classes are noted to be school challenges (MoEVT, 2006, 2014). The two selected schools were among the most crowded in the urban district during this study’s timeframe and were convenient for researcher to access.

The participants of the study were eight female English teachers with different education levels (N = 8) (see Table 2). The researcher described the entire process of the research, including the interviews, the video observations during teaching, the training, and the completion of the questionnaire by the headmasters and teachers. The description of the research process was given to each school. Then, the researcher requested teachers to volunteer for participation in the study. The teachers were given privacy and time to decide about their participation. After a week, out of ten English teachers, eight female teachers responded and expressed their willingness to participate in the study. Two male teachers, one from each school, declined to participate because of their busy schedules.
Four classes, two from each school, were involved in the study. These classes were all used for teacher observations during the teaching process. The involved classes were Standard 6 (STD 6), which contained 120 students (aged 12–13 years); Standard 7 (STD 7), which contained 118 students (aged 13–14 years); Form 2 A, which contained 70 students (aged 16–17 years); and Form 2 B, which contained 75 students (aged 16–17 years). Thus, the observed classes contained 70–120 students, and the students’ age range was 12–17 years. These classes were involved because the teachers who gave their consent to participate in this study were the subject teachers in those classes. Before the start of classroom observations, students were informed by the researcher of the intention to conduct research in their classrooms. They were informed about the aim of the research and its significance, as well as about research activities such as video recording. It was made clear to the students that the importance of this study was to improve teaching and learning activities in their school. They were given choice to accept or reject their participation. In addition, these students were given consent letters to seek their parents’ consent for their children to participate in the research. Fortunately, all letters were returned with acceptance signatures to participate in the study. However, to answer the open-ended questionnaire, only some students (N = 150) were selected. The number of students for questionnaire completion was determined with light of data management ability and the limited time for the research. Additionally, the number was considered sufficient according to Creswell (2014), who writes that qualitative research does not necessarily require a large number of participants. The students were randomly selected: 50 students from the classes of more than 100 students and 25 students from the classes of fewer than 100 students (see Table 1). To avoid collecting data from only the high-performing students (as might have occurred if the students were selected by the teachers), the researcher who did not know the students, performed the selection. All the teachers taught English during the observation periods, as this was their subject.
Table 1. Participants and context involved in the study.

<table>
<thead>
<tr>
<th>School</th>
<th>Class level and size</th>
<th>No. of students for questionnaire</th>
<th>Age</th>
<th>No. of teachers</th>
<th>Level of education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>STD 6</td>
<td>120 students</td>
<td>50</td>
<td>12–13</td>
<td>Diploma Certificate</td>
</tr>
<tr>
<td></td>
<td>STD 7</td>
<td>118 students</td>
<td>50</td>
<td>13–14</td>
<td>Diploma Diploma</td>
</tr>
<tr>
<td>Secondary school</td>
<td>Form 2 A</td>
<td>70 students</td>
<td>25</td>
<td>16–17</td>
<td>Diploma Diploma</td>
</tr>
<tr>
<td></td>
<td>Form 2 B</td>
<td>75 students</td>
<td>25</td>
<td>16–17</td>
<td>Diploma Bachelor’s degree</td>
</tr>
</tbody>
</table>

5.2 Data collection methods and training process

The methodological process of this study began with the first phase of video data collection (observations of teachers’ lessons). Then, the semi-structured interviews were conducted to ask the teachers various questions about their daily teaching practices. After the interviews, there was a two-week training for the teachers about active learning, collaborative learning, and feedback. The training was used to support teachers’ practice and not to collect data for analysis. After the training, there was a second phase of video data collection (observations of teachers’ lessons). The video data of the lesson observations for the first and second phases were collected and amounted to about 31 hours. Finally, there were open-ended questionnaires for the teachers and the students. An overview of the methodological process is presented in Table 2.
Table 2. Timeline for Data collection and training process.

<table>
<thead>
<tr>
<th>Data source</th>
<th>Timeline</th>
<th>Generated data</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>First phase video data collection (observations of teachers’ lessons)</td>
<td>6th Apr – 24th Apr, 2015</td>
<td>Two lessons each teacher (16 video lessons)</td>
<td>Teachers (N = 8)</td>
</tr>
<tr>
<td>Semi-structure interview</td>
<td>27th Apr – 8th May, 2015</td>
<td>Eight audio records of interview</td>
<td>Teachers (N = 8)</td>
</tr>
<tr>
<td>Two-week training</td>
<td>11th – 22nd May, 2015</td>
<td></td>
<td>Teachers (N = 8)</td>
</tr>
<tr>
<td>Second phase video data collection (observations of teachers’ lessons)</td>
<td>25th May – 19th June, 2015</td>
<td>Four lessons each teacher (32 video lessons)</td>
<td>Teachers (N = 8)</td>
</tr>
<tr>
<td>Open-ended questionnaires</td>
<td>22nd June – 3rd July, 2015</td>
<td>158 filled questionnaires</td>
<td>Teachers (N = 8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Students (N = 150)</td>
</tr>
</tbody>
</table>

5.2.1 First phase of video data collection (pre-training observations of teachers’ lessons)

Observation is an effective data collection method when the need is to observe what is happening in a real-life context (Ary, Jacobs & Sorensen, 2010; Creswell, 2014; Jorgensen, 1989; Liamputtong, 2010). Observation as a method of data collection is stated to help to fully understand the complexity of many situations (Patton, 2015, p. 21). For example, Foster (1996) described one of the various uses of observation as “to enable qualitative description of the behavior or culture of a particular group, institution or community” (p. 58). In this study, the observations were conducted to collect data about the teachers’ daily teaching activities and their activities after receiving pedagogical training. The teachers’ lessons were observed and video-recorded because it was expected that this would represent a real picture of teaching activities before and after the training.

The first phase of video data collection in the lesson observations was intended to observe teachers’ daily teaching activities and what ALTTs they used in their TLCC (RQ1 and RQ2). Sixteen observations were conducted before the interview to avoid the chance of the participants being influenced by interview questions during the period of observation. Each observation lasted 35–40 minutes, the standard duration for a one-period lesson in Zanzibar schools. In all, the first phase of lesson observations amounted to about 10 hours of video recordings. There was also an observation tool (see Appendix 8) on which the observers made notes on
various teaching and learning aspects. This tool was used in the first and second video data collections of lesson observations and had been previously pre-tested and then modified. Before the real observations, the researcher requested the opportunity to observe two teachers who were not participating in the study. In this pilot observation, it was found challenging to note how often feedback was given while the lesson was going on. Thus, the component that indicated how often the feedback was given was removed after the piloting. It was realized that, on a practical level, investigating how often feedback is provided could be possible if feedback were the only aspect under investigation. It could also be possible to investigate it in the video data after the observation. The observation tool involved content related to the theoretical background and key concepts of this study, such as availability of collaborative groups, student participation in groups, teacher–student interactions, student–student interactions, student tasks, feedback production, student thinking, and creation of an active classroom environment. The observation tool was specifically intended to support the analysis process of RQ2: What ALTTs did the teachers use before and after receiving training in active learning, collaborative learning activities, and feedback? Thus, some aspects used in the observational tool were later used as categories in the RQ2 coding scheme. For the observations, there were two fixed cameras in the classroom and one mobile camera outside the class. The observers were mostly outside the classroom, where they could take notes of what was going on in the class and complete the observation tool (see Appendix 8). The classrooms’ half-wall structure allowed the observer to see what was going on in the class, and the cameramen could record what was going on in the class without interfering with the teaching activities. The students sat on the floor, and this helped them to avoid seeing or focusing on the observer or the camera outside the classroom. The observers were the researcher and one assistant from a university in Zanzibar. The two observers viewed different lessons at different times. The videos were later transcribed and so supported the analysis process through the analysis of the authentic transcripts. As Patton (2015) has argued, audiotaping data can greatly increase the quality of field observations and the utility of the observational record for others. Thus, recording the video helped in data transcription, and the coding process was authentically conducted because there was always a record for reference. Figure 5 shows a view of the outside of the classrooms in one of the schools where this study was conducted.
5.2.2 Semi-structured interview

Interviews are used in research to help understand peoples’ experiences and the meanings of those experiences (Ary et al., 2010). This study used face-to-face semi-structured interviews to provide an opportunity for the researcher to seek elaboration on the participants’ answers and thus provide more information about the content. In semi-structured interviews, the questions are pre-written, but the interviewer can modify the format or questions during the interview process (Ary et al., 2010; Harrell & Bradley, 2009; Savin-Baden & Major, 2013). Through this type of interview, the interviewer can add more questions if the need arises according to the responses to the previously asked questions or if the participants’ responses suggested further inquiry that was not anticipated (Galletta, 2013; Kallio, Pietila, Johnson & Kangasniemi, 2016). This helped the researcher collect detailed data about the participants’ knowledge of their daily teaching activities and to achieve the objective of understanding teachers’ knowledge.

The interview contained 12 open questions (see Appendix 1). The content of the interview questions was related to the teacher’s understanding of different teaching activities, such as active learning, collaborative learning, student
participation and interaction, feedback, student tasks, student understanding, and classroom context. The interview questions were tested to check if they were well understood according to the need of the research. To pilot the questions, three teachers, who were not the participants in this study, were interviewed. The questions were well understood, except for two questions, for which all three teachers asked for clarification. These questions were reformulated by removing ambiguous words. In practice, the interview sessions were organized in Kiswahili (the native language of the participants and interviewers). However, it was agreed to use English words for the terms whose Kiswahili translation was not common among teachers. For example, feedback was used instead of the Kiswahili word mrejesho. The interviews were conducted on two days, one day in the first week and the second day in the second week. On the first day, each interviewer interviewed two participants from the primary school. Each interview lasted 25–30 minutes. During the interview session, each interviewer took one teacher into the room, and it was agreed that the maximum interview time would be 30 minutes. As soon as the interviews of the first two teachers were finished, the other two teachers from the same school were also interviewed separately. This was done to avoid the chance of the participants informing each other about the content of interview questions. The same procedures were followed when interviewing the other four teachers from the secondary school. All interviews were audio-recorded to aid the analysis. According to Liamputtong (2010), recording interviews allows returning repeatedly to relisten to the data. The availability of real participants’ records throughout the research process ensures the authenticity of the data.

The data from the interviews was expected to answer part of RQ1: “What is teachers’ knowledge of their daily teaching practice?” The answer to this question would then achieve the first objective of this study, which was to understand teachers’ knowledge of their daily teaching activities.

5.2.3 Training the teachers

In this study, the training for the teachers as participants was conducted for two weeks, five hours per day, at the State University of Zanzibar. The training took place after the first phase of video data collection of lesson observations and semi-structured interviews. The main aim of the training was to familiarize teachers with active learning methods and techniques, collaborative learning activities, and feedback production so as to develop their ALTTs. Videos were used during the training to help teachers see active learning methods and techniques, collaborative
learning activities, and feedback taking place in a real classroom context. The videos that were used during the training provided an opportunity for the teachers to hear and observe about what is done by other teachers to activate learning in the classroom. Thus, the teachers were able to watch the lessons applying active learning methods and techniques, collaborative learning activities, and effective feedback production. Table 3 summarizes the aims, activities, and videos which were used during the training.

Table 3. Training activities.

<table>
<thead>
<tr>
<th>Day</th>
<th>Activities</th>
<th>Aim</th>
<th>The titles of the videos used in the training</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Watching videos about active learning lessons</td>
<td>To gain understanding of active learning methods and techniques</td>
<td>Active learning: everyone is engaged</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Active learning classrooms: learning through experience</td>
</tr>
<tr>
<td>2</td>
<td>Watching videos about collaborative learning lessons</td>
<td>To gain understanding of collaborative learning activities</td>
<td>Collaborative learning builds deeper understanding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collaborative learning techniques</td>
</tr>
<tr>
<td>3</td>
<td>Watching videos about giving effective feedback</td>
<td>To gain understanding about effective feedback</td>
<td>Effective feedback in education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Critique and feedback: the story of Austin's butterfly</td>
</tr>
<tr>
<td>4</td>
<td>Discussion about active learning methods, techniques, feedback and collaborative learning</td>
<td>To gain more understanding of the concepts</td>
<td></td>
</tr>
<tr>
<td>5–6</td>
<td>Working in collaborative groups</td>
<td>To acquire the skills and experience of active learning, collaborative learning activities and feedback</td>
<td></td>
</tr>
<tr>
<td>7–9</td>
<td>Task presentation</td>
<td>To acquire the skills and experience of giving and receiving feedback</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Concluding discussion about active learning, collaborative learning and feedback</td>
<td>To summarize teachers' understanding of active learning, collaborative learning, and feedback production</td>
<td></td>
</tr>
</tbody>
</table>

In the training session, the procedure was as follows. On the first day, the teachers watched two videos showing classroom teaching that used an active learning
approach. The teachers were instructed to observe the teaching method and the techniques that were used in the video. After viewing the video, the teachers engaged in a discussion about the active learning teaching techniques observed in the videos. The teachers could mention various teaching techniques, such as giving tasks to students and guiding the students to perform the tasks. The emphasis in the discussion was to help the teachers understand the activities of active learning that encourage students’ involvement in their own learning and lead them to think about what they are doing by giving them the responsibility for it. These included the activities of giving a task to students and guiding them to perform the task in groups, facilitating students to discuss their task so as to produce quality work together, guiding students to evaluate their own task through feedback, and supporting students to develop their task.

On the second day of the training, the teachers watched two videos of collaborative learning taking place in a class. They were instructed to carefully observe the activities displayed in the videos. At the end of video, there was a discussion about collaborative learning activities. The teachers could mention different aspects of collaborative learning activities, such as putting students in collaborative groups, giving them a task to work on, student interaction, sharing of ideas among students, and student commitment to the task. On third day, the teachers watched two videos showing how effective feedback is given in a class. The teachers again were instructed to carefully observe the videos so that, during the discussion, they could mention different indications of the effective use of feedback, such as insisting students to observe their task, asking students where they think they could improve their task performance, and facilitating students to think about the answer to another student’s question.

On the fourth day, the teachers had an opportunity to discuss active learning methods and techniques, collaborative learning activities, and feedback production. Teachers, with the assistance of the researcher as a training facilitator, could discuss in depth the nature of active learning methods and techniques, how to facilitate collaboration among students, and how to give effective feedback.

On the fifth and sixth days, the teachers were instructed to sit in two groups, with four teachers in each group. They were instructed to prepare four lesson plans in collaboration (for each group) that included active learning, collaborative learning, and feedback components. The teachers used markers and a flip chart pad and worked in collaboration. They first wrote their ideas, then discussed their ideas, and finally wrote four lessons plans on a new flip chart page. In this way, they were
expected to learn collaborative learning through a realistic and practical application of its ideas.

On days seven, eight, and nine, each teacher had a chance to present the task, which was a lesson plan with active learning, collaborative learning, and feedback components. Six teachers presented their lessons on days seven and eight, and two teachers presented their lessons on day nine. During their task presentations, other teachers gave feedback to improve the task (lesson plan). For example, the teachers could give feedback to improve the lesson’s activities, to add more time for activities, and sometimes to change the activities. For example, one teacher presented a lesson in which, for the student activities part, she wrote that students would be given the task of describing Tanzania. Other teachers thought that the task could be difficult for grade six students and that it might be better to ask students to describe Zanzibar instead of Tanzania. In this way, the teachers were engaged in discussions and activities that helped them learn practically how to activate learning through collaboration and feedback. On the last day of the training, there was a joint and concluding discussion, in which every teacher was asked to describe her understanding of active learning, collaborative learning, and feedback. The teachers and facilitator jointly discussed the important aspects of active learning, collaborative learning, and feedback. All these activities were expected to develop the teachers’ ALTTs.

5.2.4 Second phase video data collection (post-training observations of teachers’ lessons)

The second phase of video data collection of the lesson observations took place after the training. In this phase, there were 32 observations, four for each teacher, each lasting 35–40 minutes. This phase was intended to answer the research question about what ALTTs the teachers used after receiving training on active learning, collaborative learning activities, and feedback (RQ2), as the aim of this study was to support teachers’ development of their ALTTs in their TLCC. In all, the second phase of video data collection of lesson observations amounted to about 21 hours of video recordings. The observation tools used in the first phase of observations was used again in this phase (see Appendix 8).
5.2.5 Open-ended questionnaires

The decision to use open-ended questions was due to the qualitative nature of this study and its goal of obtaining detailed information on the participants’ perceptions of the teaching process. Open-ended questions are often used to provide detailed and real views of people (Foddy, 1993; Meld, 1990). McClure (2002) argued that open-ended responses in questionnaires provide specific and meaningful information as participants have the opportunity to provide a detailed and comprehensive response. This detailed information was very useful for the objectives of this study. There were two separate questionnaires: one for the teachers and another for the students. The teachers’ questionnaire had 14 questions (see Appendix 2), while the students’ questionnaire had 13 (see Appendix 3).

The questions were constructed in English and then translated into Swahili to make it easier for the participants to express their views. After the researcher’s translation, the translated questionnaires and the English versions were presented to a Swahili speaker, who is a professional teacher of Swahili, for translation feedback. The questionnaires were given to four teachers and 10 students from a school which was not included in this study to serve as a pilot to see if the participants could understand the meaning of the questions as intended. After the confirmation that all questions were clearly understandable, the questionnaires were ready to be used at the end of the study. However, the teachers’ copy included the original questions in English and their translation into Swahili. This was done to support their understanding of the questions.

The questions in both questionnaires were constructed with close attention to the theoretical background, key concepts, and aim of the study. Thus, the content of the questions on both questionnaires were aimed at examining teachers’ and students’ perceptions of teaching and learning before and after using collaborative learning activities and feedback to develop ALTTs in their context (RQ3). The questions in the teacher and student questionnaires required the participants to explain their views of teaching and learning before and after the use of collaborative learning techniques and feedback, such as their opinions on teaching and learning in groups, their views of giving and receiving feedback, what they believed to be the challenges in using these techniques, and what they thought should be done to facilitate teaching and learning in their context. Each question in the questionnaire also required the participants to give examples of the answers. This led to the collection of detailed information from the participants.
The teachers and students were given the questionnaires after the second phase of lesson observations. However, the teachers could return them after two weeks, while the selected students were asked to answer the questionnaires in school under the researcher’s supervision. The researcher read each question and asked the students to simply write whatever they thought, as there were no right or wrong answers. This was done on different days in the selected schools. The students spent about 30–35 minutes completing the questionnaire. The purposes of supervising the questionnaire was to ensure that students wrote their own opinions and to prevent the loss of the questionnaires.

5.3 Data analysis

The content analysis approach was used in this study. This approach has been widely discussed by various sources (Ary et al., 2010; Chi, 1997; Erlingsson & Brysiewicz, 2017; Franzosi, 2008; Krippendorff, 2018; Neuendorf, 2002; Schreier, 2012; United States General Accounting Office [U.S. GAO], 1989). In content analysis, the analysts collect, organize, and follow certain procedures to interpret and reach the deeper meaning of written materials (Erlingsson & Brysiewicz, 2017; U.S. GAO, 1989). On the practical level, the information in the written materials can be summarized by counting and telling the number of times each issue or statement occurs in the text (Krippendorff, 2004; U.S. GAO, 1989). The main procedures of content analysis, according to various sources, are selecting or making the decision on the material to be used in analysis, selecting the unit of analysis, developing a coding category, coding the material, and analyzing and interpreting the results (Ary et al., 2010; Chi, 2007; Erlingsson & Brysiewicz, 2017; Liamputtong, 2010; U.S. GAO, 1989). All of these steps were followed in the analysis of the data in this study.

For example, in this study, video data of lesson observations were transcribed. The transcription paid close attention to what the teachers said. Audio interviews were also transcribed. The transcription was done to prepare the written materials for content analysis. The open-ended questionnaire was another written data source analyzed in this research. The unit of analysis was a meaningful phrase in each data source, and the coding categories were developed for each data source. After coding each source, the coded data were analyzed by counting the occurrence of the categories, searching for comparisons and differences, and formulating the deeper meaning of the coded data. Furthermore, content analysis can be used to analyze an attitude or perception or to answer the question what. (U.S. GAO, 1989). In this
study, all three research questions required the answer of what: in RQ1, what are teachers’ knowledge and activities; in RQ2, what ALTTs did teachers use before and after the training; and in RQ3, what are teachers’ and students’ perceptions of teaching and learning before and after using collaborative learning activities and feedback to develop ALTTs in their context. Thus, according to the need of the research questions of this study, content analysis proved to be the appropriate approach of analysis for all the data sources.

The analysis process was done in three stages (see Table 4). First, the analysis of the semi-structured interview and pre-training lessons observations which answered the first research question was conducted. The second stage was the analysis of pre- and post-training lesson observations and open-ended questionnaires which answered the second research question. Finally, the third stage was the analysis of the open-ended questionnaires, which answered the third research question.

Table 4. Summary of the analysis process.

<table>
<thead>
<tr>
<th>Data source</th>
<th>Analysis approach</th>
<th>Targeted research question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview</td>
<td>Content analysis</td>
<td></td>
</tr>
<tr>
<td>Pre-training data of first phase</td>
<td>Data-driven and theory-driven</td>
<td>RQ1</td>
</tr>
<tr>
<td>lesson observations</td>
<td>Data-driven</td>
<td></td>
</tr>
<tr>
<td>Pre-training data of first phase</td>
<td>Theory-driven</td>
<td>RQ2</td>
</tr>
<tr>
<td>lesson observations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-training data of second</td>
<td></td>
<td>RQ3</td>
</tr>
<tr>
<td>phase lesson observations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open-ended questionnaires</td>
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<tr>
<td>Open-ended questionnaires</td>
<td>Data-driven</td>
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</table>

5.3.1 Analysis of semi-structured interviews for RQ1

The analysis of the semi-structured interview data was intended to answer part of RQ1: “What are teachers’ knowledge and activities of their daily teaching practices?” All teachers’ verbal utterances during the interview sessions were transcribed. The transcripts were the source of written material for the content analysis used in this research. The transcripts were read several times to see what was recorded in the data. Then, a coding scheme with data- and theory-driven categories was generated from the interview questions and teachers’ responses. The unit of analysis was a meaningful phrase or sentence that described or mentioned
the category. The coding scheme for the interview had three categories (see Appendix 4). The first one was teachers’ knowledge of specific teaching techniques. This was a theory-driven category, as it was intended to understand teachers’ knowledge on the specific teaching concepts of collaborative learning, active learning, and feedback. The category was coded from the responses of questions 9, 11 and 12, in which the participants expressed their understanding of active learning, collaborative learning, and feedback. In 128 items coded from interview data, 24 codes were classified as expressing teachers’ knowledge of specifying teaching techniques. The second category was teachers’ knowledge of other teaching techniques. This was a data-driven category intended to identify other teaching techniques mentioned by the teachers. The category was coded when teachers expressed their understanding of other teaching techniques, such as questioning, repetition, student tasks, and other techniques (which could not be coded in the first category). This second category resulted in 71 codes. The third category was teachers’ knowledge of teaching and learning context. This was also a data-driven category, which was coded when teachers expressed their understanding of what hindered or facilitated their teaching in the classroom context, such as availability of resources, infrastructure, and class size. Thirty-three codes were classified in the category of teachers’ knowledge of teaching and learning context. To develop the analysis, after the completion of the coding process, the researcher checked the codes that were mentioned by all teachers (as these were the teaching activities that all teachers claimed to understand or use). This comprised the group of codes assigned the label familiar knowledge. The codes that were mentioned by fewer teachers and which, although mentioned, the teachers were not sure about were also grouped together and were labelled unfamiliar knowledge. An example would be when the teacher said something like “I think ... maybe, not sure.” A category not found in all teachers, or found for only one teacher, was also checked and named unknown knowledge (this was done when teachers stated directly that they did not know or understand the concept), such as when they said, “I don’t know.” The process of counting the occurrences of the codes led to the understanding and interpretation of the aspects and familiarity of teachers’ knowledge.

5.3.2 Analysis of pre-training lesson observations for RQ1

Sixteen pre-training lesson observations were analyzed by using a data-driven coding scheme. This was done as part of answering RQ1: “What are teachers’
activities in their daily teaching practices?” The data-driven coding scheme was
developed because the target was to find exactly what was done by the teachers in
their daily teaching practices. Thus, reading the transcripts several times revealed
that the data documented different teaching activities that were used, and so the
coding scheme had to include specific categories: student interaction, feedback,
teacher–student interaction, students’ task, thinking, questioning, repetition, and
elaboration (see Appendix 5). The unit of analysis was a phrase or sentence that a
teacher used to direct students to learn or do anything related to learning. For
example, when a teacher said, “Discuss with your partner,” this was coded in the
category of student interaction. In developing the analysis, the coded data for each
teacher was read and checked several times. The next step was to count how many
times each category (technique) occurred in each lesson for all teachers and the
examples of that technique. Rechecking the identified teaching activities led to a
deeper understanding of how often these activities were used. The counting of the
occurrence of the category for each lesson led to the identification of two groups
of teaching activities that were used by teachers. These were the activities that were
found to be most used by teachers and the group of teaching activities that were the
least used. These groups were labelled as familiar teaching activities and
unfamiliar teaching activities. In all, the coding process of pre-training lesson
observation for RQ1 resulted into 512 codes: 147 codes in repetition, 141 codes in
questioning, 111 codes in elaboration, 46 codes in feedback, 42 in teacher–student
interaction, 13 codes in student interaction, six codes in thinking, and six codes in
students’ task.

5.3.3 Analysis of pre- and post-training lesson observations and
open-ended questionnaires for RQ2

The analysis of the pre- and post-training lessons was done to answer RQ2: “What
ALTTs did the teachers use before and after receiving training of active learning,
collaborative learning and feedback?”. The analysis of the pre- and post-training
lessons for RQ2 were done in the same way, and the results were later combined to
check the similarities, differences, and developments. There are 48 lesson videos,
a total of 31 hours. In the pre-training videos, there were 16 lessons, two for each
teacher. In the post-training videos, there were 32 lessons, four for each teacher.
After the transcription step of preparing a written document for content analysis,
the next step was to develop a coding scheme for the video data. The categories in
the coding scheme for RQ2 were generated from the observation tool, which
considered aspects of active learning, collaborative learning, and feedback (see Appendix 9). The unit of analysis was a meaningful phrase or sentence that showed an example of an ALTT. These were the phrases or sentences that showed use of activating teaching techniques, such as teachers’ statements to direct students to work in groups, to give feedback, to think, and to perform various activities. If the teachers said anything that was not meant to facilitate learning or understanding of the lesson, it was not considered as a unit of analysis. For example, the teachers sometimes asked the students to clean the blackboard. Six theory-driven categories were formed to identify ALTTs, all related to the theory and key concepts used in this study. The categories were named the following: facilitating student interaction, facilitating teacher–student interactions, facilitating feedback, facilitating task concentration, facilitating students thinking, and creating an active classroom environment (see Appendix 6). The coding process of pre- and post-training lesson observations resulted into 2,358 codes in all: 392 in facilitating student interaction, 471 in facilitating teacher–student interactions, 412 in facilitating feedback, 418 in facilitating task concentration, 377 in facilitating students thinking, and 288 in creating an active classroom environment.

After coding, to develop the analysis, the codes for each category were counted in each lesson. This led to the identification of the kinds of ALTTs used by each teacher in each lesson. Rechecking the identified ALTTs and making comparisons among all six lessons for each individual teacher led to the understanding of the similarities of ALTTs used before and after the training, as well as teachers’ developments in using those techniques after the training. From the coded data, the examples of the techniques used were also identified. This led to an understanding of the quality of the teachers’ ALTTs before and after the training. Thus, the process of counting ALTTs for each lesson, the identification of the examples of those techniques, and comparing these among the lessons of each individual teacher produced four ways to gain a deeper understanding of the meaning of the data: first, the similarities and differences of the ALTTs used before and after the training; second, the development of the teachers’ ALTTs after the training; third, the development of new technique(s) after the training; and fourth, inconsistence of using ALTTs. Charts were used in the analysis process to illustrate the occurrence of teachers’ activities.

To sum up the analysis process for RQ2, the process identified what ALTTs each teacher used in all six lessons and what examples were used by the teacher for each technique. Then, it was checked if there was any difference in the teacher’s ALTTs before and after the training. Each individual teacher’s activities were
compared in all their six lessons and marked if there was any increase or decrease in the use of specific techniques before and after the training. For example, it was checked whether a teacher used feedback in her first lesson, then whether this happened or not in her other five lessons. The examples of the feedback used by this teacher were also identified in all lessons. This helped to understand the similarities, differences, and development in their use of ALTTs before and after the training.

The open-ended questionnaire data was also analyzed to answer the second research question. In the teachers’ questionnaire, the teachers’ responses to question 11 were analyzed to determine what ALTTs they explained that they used after the training. This question required the teachers to mention any techniques they used that they believed could facilitate active learning in their context (see Appendix 2). In this analysis, the same coding scheme which was used for coding video data for research question two (see Appendix 6) was used again for coding the open-ended questionnaire data for the same research question (RQ2). The analysis process was developed by identifying the occurrences of the categories for each teacher’s response while mentioning her use of the technique in her teaching.

To find out more about what ALTTs the teachers used after the training, students’ responses to questions 8–10 were analyzed (see Appendix 3). In these questions, students were asked to mention any teachers’ activities that they thought had improved or hindered their understanding. The same coding scheme used for coding the video data and the teachers’ questionnaire for RQ2 was used again to check what ALTTs students mentioned as being applied by the teachers (see Appendix 6). The occurrences of the categories in the students’ questionnaire responses were counted to see to what extent each technique was mentioned by the students. This also led to the identification of the ALTTs used by teachers according to the students.

The coding process of open-ended questionnaire resulted into 682 codes in all. In the category of facilitating student interaction, 161 codes were found, 95 codes were classified in the category of facilitating teacher–student interactions, 163 were classified as facilitating feedback, 93 as facilitating task concentration, and 170 as creating an active classroom environment. The identification of ALTTs from the teachers and students’ questionnaire data was matched with the results from the analysis of the lesson observations to see how the results did or did not support each other.
5.3.4 Analysis of an open-ended questionnaire data for RQ3

Open-ended questionnaires for teachers and students were also analyzed using content analysis. This helped to explore different perceptions of teachers and students about the application of ALTTs in their context. The aim of obtaining open-ended questionnaire data was to answer RQ3: “What are the teachers’ and students’ perceptions of teaching and learning before and after using collaborative learning activities and feedback in respect to developing ALTTs in their context?” The answer to this question led to achieving the objective of this research, which was to examine the teachers’ and students’ perceptions of teaching and learning supported by collaborative learning activities and feedback in their context.

The coding scheme for the questionnaires was data-driven and developed based on the participants’ responses. After the data was checked several times, the coding categories were labelled as teachers’ and students’ perceptions of teaching and learning before the training (analyzed from questions 4 and 5 from the teacher questionnaire and question 3 from the student questionnaire); teachers’ and students’ perceptions of teaching and learning after the training (analyzed from questions 4 and 5 from the teacher questionnaire and question 3 from the student questionnaire); teachers’ and students’ perceptions of teaching and learning by using feedback (analyzed from questions 9, 10, and 13 from the teacher questionnaire and questions 6, 7, and 12 from the student questionnaire); teachers’ and students’ perceptions of teaching and learning by using collaborative learning (analyzed from the questions 6–8 and 12 from the teacher questionnaire and questions 4, 5, and 11 from the student questionnaire); and teachers’ and students’ perceptions for effective teaching and learning (analyzed from question 14 from the teacher questionnaire and question 13 from the student questionnaire) (see Appendix 7). The coding process of the open-ended questionnaires for RQ3 resulted into 944 codes in all. One hundred sixty-one codes were classified as teachers’ and students’ perceptions of teaching and learning before the training, 212 as teachers’ and students’ perceptions of teaching and learning after the training, 163 as teachers’ and students’ perceptions of teaching and learning by using feedback, 237 as teachers’ and students’ perceptions of teaching and learning by using collaborative learning, and 171 as teachers’ and students’ perceptions for effective teaching and learning. These codes were then sub-divided according to their contents, as will be described in the results chapter. Table 5 presents the categories and source questions from the teacher and student questionnaires.
Table 5. Coding categories and source questions from open-ended questionnaires.

<table>
<thead>
<tr>
<th>Coding categories</th>
<th>Teacher questionnaire</th>
<th>Student questionnaire</th>
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<tbody>
<tr>
<td>Teachers' and students' perceptions of teaching and</td>
<td>4. Were there any differences in student learning before and after the training?</td>
<td>3. Do you think there were any differences in teaching before and after this project?</td>
</tr>
<tr>
<td>learning before the training</td>
<td>5. If there were any differences, please mention them (and provide examples, if possible).</td>
<td>Please describe the differences and give examples.</td>
</tr>
<tr>
<td>Teachers' and students' perceptions of teaching and</td>
<td>4. Were there any differences in student learning before and after the training?</td>
<td>3. Do you think there were any differences in teaching before and after this project?</td>
</tr>
<tr>
<td>learning after the training</td>
<td>5. If there were any differences, please mention them (and provide examples, if possible).</td>
<td>Please describe the differences and give examples.</td>
</tr>
<tr>
<td>Teachers' and students' perceptions of teaching and</td>
<td>9. Did you notice any effect of feedback on student learning?</td>
<td>6. Explain the feedback (if any) that the teacher gave that supported your understanding.</td>
</tr>
<tr>
<td>learning by using feedback</td>
<td>10. If you noticed any effect of feedback to students learning please describe it briefly (and give examples, if possible).</td>
<td>Please give examples.</td>
</tr>
<tr>
<td></td>
<td>13. Do you think there are any challenges in facilitating feedback in large classes? If there are challenges in facilitating feedback in large classes, please mention them.</td>
<td>7. Was there any kind of feedback that hindered your understanding? Please give examples.</td>
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<tr>
<td></td>
<td>12. What are your opinions about using feedback for teaching and learning?</td>
<td>12. What are your opinions about using feedback for teaching and learning?</td>
</tr>
<tr>
<td>Coding categories</td>
<td>Source questions from:</td>
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</table>
| Teachers’ and students’ perceptions of teaching and learning by using collaborative learning | Teacher questionnaire | 6. How do you perceive the technique of grouping students for student learning?  
7. Did you notice any impact of collaborative methods on student learning?  
8. If there was any impact, please describe it (and give examples, if possible).  
12. Do you think there are any challenges in implementing collaborative learning activities in large classes? If you believe there are challenges in implementing collaborative learning activities in large classes, please mention them. |
| | Student questionnaire | 4. What are your opinions about working together in groups?  
5. Do you think working together in collaborative groups supports or hinders your understanding? Please give examples.  
11. What are your opinions about teaching and learning in collaborative groups? |
| Teachers’ and students’ perceptions for effective teaching and learning | 14. What do you think should be done to facilitate students’ active learning in large classes?  
13. What do you think should be done to improve your understanding in this large class? |

The unit of analysis was a meaningful phrase that indicated teachers’ or students’ opinions of the category. After carefully coding the questionnaires, the coded phrases were checked several times to see exactly what content was mentioned by the teachers and students for each of the identified categories. Then, the similar content items indicating the same opinions were grouped together, and then the perceptions of the students and teachers were further identified in the following minor themes: first, perceptions shared by teachers and students (these were positive and negative perceptions of teachers and students about the main category); second, perceptions found only in the teachers’ responses (these were either positive or negative perceptions, or both, but the content was only found in the teachers’ responses); and third, perceptions found only in the students’ responses (these were positive or negative perceptions or both, but the content was only found in students’ responses).

In summary, the analysis led to the identification of teachers’ and students’ main perceptions (teachers’ and students’ perceptions of teaching and learning: before the training, after the training, by using feedback, by using collaborative learning, and for effective teaching and learning). From these main perceptions,
there were minor themes identified as shared perceptions of teachers and students, perceptions found only in teachers, and perceptions found only in students.

5.4 Transcription and translation process

Transcribing is the process of presenting audible or visible data in written form. The transcription process can be done in different ways depending on the aim and methodological design of the study (Bailey, 2008). Transcribing is the first step in content analysis, as it transfers the document from other forms, such as audio or video recordings, to written material. Part of the process of transcribing is making a decision about what level of data is needed. For example, if it is about video data, a researcher needs to decide whether there is a need to transcribe things such as the context and resources available. Regarding this study, the transcription of the interviews was based only on what was said by the participants in responding to the interview questions. All verbal utterances from the teachers’ responses and the interviewer were transcribed, leaving out nonverbal language and involuntary sounds such as coughing and sneezing. The interest was in what teachers said about the question.

Another important step in transcribing is to consider the presentation of the verbal utterances. In this study, the language of the interview was Kiswahili, but the interviewer and the interviewee sometimes used English words for some concepts common among teachers, such as techniques instead of the Kiswahili word mbinu or feedback instead of the Kiswahili words marekebisho or mrejesho. It was decided to transcribe the exact word articulated by the participants, as this produced the exact meaning of the questions. This was also done because there are no direct and formal words for some concepts used in this study, such as collaborative learning and active learning. The concepts of collaborative learning and active learning were translated by the researcher and presented to a Kiswahili and English teacher for his remark on the translation. It was decided that collaborative learning could be presented as kujifunza katika vikundi vya kushirikiana, and active learning as ushiriki wa wanafunzi katika kujifunza in Kiswahili. During the interview sessions, the interviewers used both the English terms and their Kiswahili translations. For example, when the interviewers asked questions intended to discern the teacher’s understanding of collaborative learning and active learning, the interviewer asked: “There is this concept of collaborative learning; in Kiswahili we can say kujifunza katika vikundi vya kushirikiana. What do you understand about collaborative learning or kujifunza katika vikundi vya
This translation was also used in questionnaires. However, to maintain clarity, the teachers’ questionnaire contained the questions in both English and Kiswahili (see Appendix 2).

For the recorded lessons, the level of transcription involved only teachers’ verbal utterances. The teachers were teaching English but sometimes instructed in Kiswahili. These utterances were also transcribed in the same way they were spoken by the participants. It was decided that only nonverbal language specifically related to teaching would be transcribed to clarify the meaning of the event, such as moving around students or distributing resources to students. These helped the researcher understand the transcript, although, in the analysis, only teachers’ words were analyzed. Involuntary sounds such as coughing, and sneezing were left out. To support the understanding of teachers’ verbal utterances, students’ clear verbal language was also transcribed. This applied when students responded to teachers’ question, presented their task, gave feedback. Students’ nonverbal language directly associated with teachers’ instructions, such as raising their hands to answer questions, sitting in groups, standing in front of the class to present their tasks, posting their tasks, and similar actions were also transcribed.

In practice, the transcription of two videos and one interview session was first done by the researcher and then given to the second transcriber to read and check if he could understand it. This process was then followed in the transcription process by both transcribers. During the transcription process, there was always a reminder among the transcribers to make sure that all important aspects are transcribed. The presence of the recorded videos made the transcription process accurate, as it was easier to return to the video for reference. All transcripts were checked again by the researcher without records to see if they were comprehensible and were checked again with references to the recorded audio or videos to confirm that all important details have been included.

The transcription and translation process in this study was done carefully to ensure the validity of the results. First, for the basic concepts of the study, both languages, English and Kiswahili, were used to ensure the participants’ understanding of the concepts. Second, the translation was also proved by an English and Kiswahili teacher who is a native speaker of Kiswahili. Third, the decision to use some English words was made due to the fact that, in Zanzibar, teacher training programs are conducted in English and so it was assumed to be easier for the teachers understand the concepts in English. However, clarification was also done in Kiswahili. For the students’ questionnaire, which was translated into Kiswahili, before answering the questionnaire, the researcher described to
them the meaning of *kujifunza katika vikundi vya kushirikiana* (collaborative learning), *ushiriki wa wanafunzi katika kujifunza* (active learning), and *marekebisho* (feedback). It was not a difficult task to help them understand the meaning of these concepts because at the time of questionnaire filling, they had been recently taught with these approaches. In addition, the questionnaire-answering by students was administered by the researcher, who read and described each question before the students answered it. The students were also requested to ask if they did not understand any question.

At the stage of report writing of this research, the extracts in Kiswahili or that contained Kiswahili words were translated into English by the researcher and were given to the second transcriber to provide their translation in Kiswahili. This was done until the exact meaning from the transcriptions or questionnaires was reached.

### 5.5 Evaluation of the research

It is crucial for scientific studies to evaluate their reliability and the validity. Qualitative validity is the way to determine if the findings are accurate from the standpoint of the researcher, the participants, or the reader (Kvale, 1989). This is done to check the accuracy of the findings by employing different procedures. This study used three types of data sources: semi-structured interviews, lessons observations, and open-ended questionnaires. To ensure the validity and reliability of the study, several procedures were followed for the data collection process, coding, and analysis.

The use of member checking is one way of checking the validity of a study. Member checking is the step of presenting the final report or specific themes to the participants of the study and determining if the participants feel the findings are accurate or not (Creswell, 2014). In this study, the researcher prepared a short report from the main results of the interviews, observations, and questionnaires and the researcher’s interpretation of the results and presented them to the participants. The participants were given ample time to read the report. Then, the researcher asked their opinions on the results and interpretation in relation to their knowledge and experience. All the participants agreed with the report that the results and interpretation expressed their views, knowledge, and experiences. This was taken as a major step toward ensuring the validity of this study.

Spending prolonged time in the field is another procedure for checking the validity, when the researcher can do so. This time can help develop a deeper understanding of the problem, context, and participants of the study (Liamputtong,
This study required about four months in the field, and the researcher was highly experienced with the situation and the site of the study. She had been observing teaching and learning during the teaching practice program in her working institution for about five years. She had visited these schools several times for teaching and supervision, and she was aware of the context of the study. According to Creswell (2014), “the more experience the researcher has with the participants in their settings the more valid will be the findings” (p. 202).

The use of rich and complete descriptions to convey the findings is also considered as a credible procedure to check the validity of a study. To do this, the researcher gives a detailed description of the setting that can give a reader a better chance of understanding the discussion (Liamputtong, 2010). In this research, the context was described in detail in different chapters of this report, and the direct quotations from interviews, lessons observations, and questionnaires were attached to the results. Additionally, the selection of coding categories and the coding process were described to support the reader’s understanding of the results and how the interpretation was made. Through the details provided in various chapters of this research, the readers can grasp the meaning of the results according to this study or even form their own interpretation of the results.

Reliability analysis, which is also referred to as credibility, neutrality, consistency, and applicability, in qualitative research is a way of testing the quality of the research (Golafshani, 2003, p. 601). Gibs (2007) suggested some qualitative reliability procedures, such as checking the transcripts to make sure that they do not contain obvious mistakes made during transcription and ensuring that there is no ambiguity in the definition of the codes. In this study, the transcription was done by the researcher and the assistant who understood both English and Swahili (the first language of the participants). The data from the interview audios and lesson videos helped to recheck and make sure that there was a consistence in all transcripts. The process of creating a clear coding scheme was also mentioned as an important point for establishing the quality of qualitative research (Seale, 2000). In this study, coding schemes for each stage of the analysis were clearly defined and well understood by both coders. The codes were cross-checked by the two coders to determine if there were any misunderstandings or differences in the coding. As both coders understood English and Swahili, this helped in reaching a mutual understanding of the coded phrases and resolved minor conflicts that appeared during the process. The coding process was done manually by the two coders (the researcher and the assistant) and then repeated by the researcher using NVivo. There were no differences of coding when done manually or when using
Additionally, performing inter-coder reliability is an important step for checking the reliability of a content analysis, as it shows how the research data can be interpreted by different coders (Mouter & Noordegraaf, 2012). This measure of checking the reliability was carried out for all data sources in this study. In the interview data, six interviews out of eight were coded by two independent coders, who reached kappa value of κ = .82. Eight video data of lesson observations out of 16 for the coding process of RQ1 were also coded by two independent coders, who reached kappa value of κ = .83. In the coding process of video data of lesson observations for RQ2, 20 out of 48 videos were coded by two independent coders, for whom κ = .80. In the coding process of the open-ended questionnaire for RQ3, 65 out of 158 questionnaires were coded by two independent coders, and the agreement was κ = .92. These values indicate excellent agreement, as a kappa value above .80 is considered excellent (Neuendorf, 2002).

In summary, each step in the process of conducting this research, from planning, data collection, and data analysis to results were presented to the research unit for comments and feedback.

The researcher’s influence on the practices of participants is a concern in the validity of the study. According to Monahan and Fisher (2010), qualitative research can be less objective, especially in the aspect of the observer’s influence on participants’ actions. Drawing on Monahan and Fisher (2010), among the ways of minimizing the observer’s influence in the participants’ practices is to conduct validity checks. In this study, this was carefully considered, and so various validity checks were conducted, as already described in this sub-chapter. In addition to the validity checks, to avoid unnatural practices during observations, first, the participants were informed about the aim of the research (i.e., to investigate the applicability of these techniques in their context) and its significance in improving their practices. Therefore, it was made clear to them that their natural practices are of high importance for the aim and significance of this study and that unnatural practices would affect its results and significance. Second, to avoid the influence of observer’s presence in teachers’ practices, the observers in all observations stayed outside the classrooms. This was expected to help the teachers practice naturally, with fewer feelings of being observed in the classroom. Third, although the observers did the same things during the pre- and post-training lessons, the data revealed differences in teachers’ ALTTs before and after the training. These results indicate minimal or no influence of observers’ presence in teachers’ practices. In addition, the results from the open-ended questionnaires revealed similarities in most of the practices found in teachers’ lessons during the classroom observations.
5.6 Ethical considerations

The ethical codes for conducting research were strictly followed in all processes of this study. Among the ethical considerations in conducting research is the need to gain permission from the institution where the research is conducted and be approved to conduct the research (Ary et al., 2010). In conducting this study, the researcher followed the ethical principles established by the RGZ by requesting permission to conduct the study in its institutions. All steps were followed, including writing a request letter to the office of the Second Vice President of the RGZ to conduct research in the schools and submitting the required forms, and official written permission was given to start data collection in the identified schools.

Additionally, the verbal consent of the participants was obtained after the researcher met them in their schools, explaining to them the whole process that would be followed in conducting the research, including training, interviews, video observations, and questionnaires. The teachers were informed about the aim of the research and how long the research was expected to take. The significance of the study was clearly explained to all teachers. The teachers were free to accept or reject participation. In the group of 10 teachers to whom the research aim and procedures were introduced, two teachers declined to participate because of their busy schedules, and eight female teachers gave their verbal consent to participate. The participants were assured that all data would be used exclusively for the study and that the results would in no way affect them. The researcher explained to the students in each class about the research procedures, aims, and significance. The students were told about the importance of this study in improving teaching and learning activities in their school and were given the freedom to accept or reject participation. In addition, the students were given letters to submit to their parents, who had the opportunity to either accept or reject their children being involved in the research. All letters were returned with the acceptance signatures.

Confidentiality is very important in adhering to research ethics. Liamputtong (2010) stated that, through confidentiality, participants are assured that their information and any private details they reveal to the researchers remain as confidential as possible. In this research, the issue of the participants’ confidentiality was made clear to them, and they were promised that all data collected in this research would be used only for the purpose of the research, the goal of which was to improve the teaching practices in their schools. They were assured that their names and other personal information would not be disclosed to anyone.
6 Results

This study investigated teachers’ knowledge and practices in Zanzibar in large classes with limited teaching and learning resources. The aim was to help teachers develop their ALTTs through collaborative learning activities and feedback production in such a context. First, in this chapter, the teachers’ knowledge of their teaching practices is presented, as well as their daily teaching activities in their challenging context. The second part of this chapter presents teachers’ ALTTs before and after the training support in active learning, collaborative learning, and feedback. Third, it presents the results concerning teachers’ and students’ perceptions of teaching and learning through the use of collaborative learning activities and feedback to develop ALTTs in their context. At the end of each chapter, the main results are summarized. The last part of this chapter is a brief summary of the main findings. For the sake of anonymity in the presentation of the results, the teachers’ and students’ identities have been assigned numbers in place of their names.

6.1 What are the teachers’ knowledge and activities of their daily teaching practices in a TLCC?

The research question “What are the teachers’ knowledge and activities of their daily teaching practice in the TLCC?” will be answered in this sub-chapter. The results of teachers’ knowledge about their daily teaching practices were found in the analysis of the semi-structured interview data, while the results of teachers’ activities in their daily teaching practices were found in the analysis of the first phase observations of teachers’ lessons (pre-training observation of lessons).

6.1.1 What knowledge do the teachers have about their daily teaching activities?

In the semi-structured interview, the teachers were asked different questions about their daily teaching practices (see Appendix A). According to the interview data, three aspects of teachers’ knowledge were identified, which were the teachers’ knowledge of (1) specific teaching techniques (active learning, collaborative learning, feedback), (2) other teaching techniques (for example, questioning, repetition, elaboration, drills), and (3) effective teaching and learning contexts.
In the teachers’ knowledge about specific teaching techniques, their knowledge of the basic theoretical concepts of this study—knowledge of active learning, collaborative learning, and feedback—was investigated. The results showed that none of the eight teachers were familiar with the concept of collaborative learning. Below is an example of a teacher’s response indicating lack of knowledge about the concept of collaborative learning.

*That [collaborative learning] is new to me. (T5)*

Seven teachers were not sure if they knew the meaning of active learning, and so they were not confident enough to explain it. One teacher’s response indicated such a feeling:

*I have heard about it, but not sure, don’t know how to explain, not sure at all. (T4)*

The results indicated that collaborative learning as a concept was unknown to all the teachers, and knowledge about active learning was not familiar to them. Additionally, the results on teachers’ knowledge of specific teaching techniques showed that they had adequate knowledge about the concept of feedback, but knowledge about the types of feedback was lacking. The results indicated that all eight teachers understood the concept of feedback, but the most common strategy explained by the teachers for giving feedback was for the teachers to provide the correct answer to students. This was mentioned by all eight teachers. Also, six teachers noted that they sometimes repeat the task or clarify it, if they think the task is not well understood, as a way of giving feedback. The responses of two teachers about this revealed their knowledge about feedback:

*I myself tell the answer or ask a classmate to help. (T3)*

*I sometimes have to repeat the task or make a clarification so they can do it again. (T8)*

Two teachers stated that they ask other students to help their peers (i.e., peer feedback). Thus, the concept of feedback was familiar to all eight teachers, although the different types of feedback were unfamiliar to six teachers.

When determining teachers’ knowledge of their daily teaching practices, the aspect of teachers’ knowledge about other teaching techniques was investigated. These were the teaching activities that excluded active learning, collaborative learning, and feedback. The interview data showed that teachers had adequate knowledge of some other teaching techniques. All eight teachers responded
confidently that they knew many teaching techniques, and they provided examples of teaching activities, such as questioning, elaboration, repetition, student tasks, role-play, drill, and others (see Table 6). Questioning appeared to be the most familiar teaching techniques, as it was mentioned by all eight teachers. Some teachers’ responses indicated their knowledge about “questioning” as a teaching technique:

I like to use questions ... (T2)

There are so many techniques I use during teaching, but very often I like to warm up students by asking many questions ... (T5)

Other techniques, such as elaboration and repetition, were also mentioned by all eight teachers, while techniques such as drills, games, role-play, quizzes, and competitions were mentioned by seven teachers. Examples of teachers’ responses about their knowledge of other teaching techniques were as follows:

... using game, competition, quiz ... students are very fond of these techniques and enjoy the lesson ... (T5)

... if they don’t understand, I elaborate and repeat until they get the point. (T2)

The results also demonstrated that teachers had knowledge of the concept of student tasks. All eight teachers explained their understanding of the importance of the tasks and that they always give tasks for student assessment. Seven mentioned that sometimes they give a group task or a pair task, and students sometimes do very well, although they made it clear that it was difficult in their context to manage and assess students’ performance through group or pair tasks. One teacher mentioned that she only gave individual tasks, as she believed that individual tasks allow everyone to participate. She said:

I like to give them an individual task because if you give in groups, most of them do not participate. (T7)

Thus, interview data indicated that the concept of students’ tasks was familiar knowledge for the teachers. However, while investigating the same phenomenon of teachers’ knowledge about other teaching techniques, it was found that knowledge about student interaction was not familiar to them. Three teachers explained that the lack of interaction among students was caused by students’ weak cognitive ability, their incompetence in English, or their laziness, and that some
were just troublesome. One example of a teacher’s response indicating her understanding of student interaction was:

*Students do not interact only because they are lazy and don’t bother.* (T5)

This kind of explanation indicated that some teachers’ understanding of students’ learning was dependent on students’ behavior, ignoring the fact that the lack of interaction may have also been determined by teaching techniques and many other factors. Four teachers were not sure if they were doing interaction or not but explained that they gave tasks to students to work together and sometimes held competitions in the class. An example of a teacher’s response that showed the concept of student interaction was not familiar knowledge to her is:

*Sometimes I give task and ask each one to contribute and support each other, is this interaction or ...? Don’t know.* (T6)

The explanations of teachers about the concept of interaction suggested that the concept was not familiar to them. However, one teacher responded confidently that she knew about student interaction. She asserted that she knew about it and did her best to make students interact. One example of the teacher’s response that indicates her understanding of the concept of student interaction was:

*I always help them to interact by giving group work.* (T3)

This teacher was the only one who demonstrated knowledge about the concept of interaction. The other seven teachers’ knowledge about interaction was lacking, as four were not sure if they knew what it was, and three explained it in a negative way.

In the investigation concerning teachers’ knowledge of their daily teaching practices, the results from the interviews showed that teachers had knowledge of the effective classroom context. In this aspect of effective classroom context, the teachers explained what supported or hindered their teaching process. Five mentioned that the lack of resources was a problem for their teaching and that it was difficult to teach without resources, while three said that they were trying their best to help students without resources. However, all eight teachers explained that class size was a significant challenge in their classroom practices. School and class infrastructure, student behavior, and insufficient time were also mentioned by six teachers as challenges to their teaching practices. One teacher’s response indicated her knowledge of teaching context:
This class environment, and the context of this school, classes are very close to each other. This context is inconvenient. (T8)

The teachers showed an understanding of their teaching context, and so it appeared that the knowledge about teaching context was familiar to them. Table 6 summarizes the interview results concerning teachers’ knowledge.

Table 6. Teachers’ knowledge explored from interview results.

<table>
<thead>
<tr>
<th>Identified teachers’ knowledge</th>
<th>Results</th>
<th>Number of teachers for each knowledge</th>
<th>Examples from teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of specific teaching techniques</td>
<td>Unknown knowledge Collaborative learning</td>
<td>8 teachers</td>
<td>&quot;I never heard about it&quot; &quot;That is new to me&quot;</td>
</tr>
<tr>
<td>Active learning Collaborative learning</td>
<td>Familiar knowledge Concept of feedback</td>
<td>8 teachers</td>
<td>&quot;I always give feedback when they [students] make mistakes&quot;</td>
</tr>
<tr>
<td>Feedback</td>
<td>Unfamiliar knowledge Active learning</td>
<td>7 teachers</td>
<td>&quot;Active learning? Is that teaching by doing, I think I have never heard about it&quot;</td>
</tr>
<tr>
<td>Types of feedback</td>
<td></td>
<td>6 teachers</td>
<td>&quot;When they make mistakes, I explain to them the correct answer&quot;</td>
</tr>
<tr>
<td>Knowledge of other teaching techniques</td>
<td>Familiar knowledge Questioning, repetition, elaboration, students’ tasks Role-play, game, drills, competition, quiz</td>
<td>8 teachers</td>
<td>&quot;I like to warm up students by asking many questions&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;I give task to evaluate if they have understood or not&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;There are so many techniques I use during teaching ... using game, competition, quiz ... students are very fond of these techniques and enjoy the lesson&quot;</td>
</tr>
<tr>
<td></td>
<td>Unfamiliar knowledge Interaction</td>
<td>7 teachers</td>
<td>&quot;Sometimes I give task and ask each one to contribute and support each other, is this interaction or...? Don’t know&quot;</td>
</tr>
<tr>
<td>Knowledge of effective teaching and learning context</td>
<td>Familiar knowledge Class size Teaching resources</td>
<td>8 teachers</td>
<td>&quot;130 students or more are difficult to make all understand&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;We don’t have teaching aids it is hard&quot;</td>
</tr>
<tr>
<td></td>
<td>Classes and school infrastructure, student behavior, and insufficient time</td>
<td>6 teachers</td>
<td>&quot;This class environment, and the context of this school, classes are very close to each other. This context is inconvenient&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In summary, the content analysis for the interview data indicated that all eight teachers did not have knowledge about collaborative learning but that knowledge about the concept of feedback, student tasks, questioning, elaboration, repetition, drills, games, role-play, and effective teaching and learning context was familiar to most of them. However, the same results suggested that active learning, interaction, and types of feedback was unfamiliar to most of the teachers.

6.1.2 What are teachers’ daily activities in a TLCC?

The results related the teachers’ daily teaching activities in their TLCC were analyzed from the data on the first phase observations of teachers’ lessons (16 pre-training video data of teachers’ lesson observations). The results showed that the teachers’ daily activities were based on techniques such as repetition, questioning, elaboration, student interaction, teacher–student interaction, feedback, student tasks and student thinking. The content analysis revealed that some of these techniques were familiar to teachers and were commonly used, but some were not familiar with them, as they were less practiced.

6.1.3 Teachers’ familiar activities before the training

The results of pre-training observations of lessons indicated that repetition, questioning, and elaboration were the techniques most often used by the teachers in both lessons. Teachers mostly used repetition to repeat the topic they had presented, the students’ answer, and the instructions. The frequent use of repetition in the pre-training observations of lessons seemed to support the interview data, in which all teachers mentioned using repetition as a teaching technique in their everyday teaching.

The questioning technique was used to maintain students’ attention, and although it cannot be said that this was deep learning attention, at least it was an attempt to help them to be engaged in the activities of the class. There were many closed-ended questions that teachers asked, and there sometimes seemed to be no particular reason for these questions. Teachers were used to asking several questions, even when they did not expect students to answer, such as “Have you understood? Do you understand? Are we together? Is that clear? Can we start? Is this okay? Do you hear me?” These kinds of questions took up a large portion of the lessons. These results were supported by the interview data, in which teachers
demonstrated a good knowledge of questioning as a teaching technique. However, the quality of the questions used as a teaching technique is a point for discussion.

The study found that elaboration was another technique that teachers used to a great extent. By “elaboration technique” in this study, it was meant that the teachers added more details to what was already said in order to help students understand what they meant. Most often, teachers tried to elaborate on examples, instructions, new words, and student answers, and they used elaboration when describing a new topic. For example, when T4 asked the students the meaning of the word filter, one student answered with the Swahili word chujio. Then, the teacher elaborated that:

*a filter is a tool that can be used to separate things. For example, if something is mixed with other stuff, for example oil and water, or flour and some dirt stuff like gravel, you can use filter to separate between what you want and what you don’t want, to get clean stuff, like clean water, clean flour. That tool is called filter, or kichujio in Swahili. (T4)*

Another example of elaboration that one of the teachers used when she was teaching how to write a speech was as follows:

*With the introduction, we include greeting, and we can greet them [people] by looking to their status, and you can start with top leaders maybe a chairperson, timekeepers, and so on. Also, in the body as a second part is where you can support or oppose and keep your points. And when you explain your points, you should use vivid examples. And, in conclusion you may end by saying thank you. (T1)*

The frequent use of elaboration was also supported by the teachers’ statements in the interviews that they understood and frequently used elaboration in their everyday teaching.

6.1.4 Teachers’ unfamiliar activities before the training

The pre-training observations results showed fewer uses of effective feedback. The most common kind of feedback found in observation lessons was to praise students or ask the class to sing or clap for the student who got the right answer; for example, the most common phrases used for feedback were good, well done, well tried, good boy, and clap for her. Alternatively, the teachers asked students to sing for the student who got the correct answer. Another kind of feedback was for the teacher to give the correct answer to the students. When the teachers found that students
did not provide the correct answer, the decision was for the teacher to provide the correct answer. This happened several times and occurred with seven of the teachers. In the first lesson, only one teacher among seven who used feedback asked the support from other students. The use of feedback by seven teachers supported the interview results that teachers had adequate knowledge of the concept of feedback. Also, the use of fewer kinds of feedback in the observations of teachers’ lessons supported interview findings that the types of feedback were unfamiliar knowledge to the teachers. Although all eight teachers seemed to have good knowledge on the concept of feedback during the interviews, one teacher (T1) did not use any kind of feedback in either of the lessons of pre-training observations (see Table 7).

Additional results of the pre-training lesson observations showed that all eight teachers were trying to facilitate interaction. However, this was mostly teacher–student interaction and very rarely interaction among students. In facilitating teacher–student interaction, most teachers were trying to make students become engaged with them and do things together, making statements such as “Let us read together,” “Read after me,” and “Repeat what I say.” This was to facilitate students’ interaction with their teachers, though only on a basic level. This was intended by the teachers to lead students to focus on them and concentrate on their teaching. Facilitating interaction among students was rarely found for T1, T2, T3, T4, and T8 in Lesson One and T3 and T8 in Lesson Two. When present, this interaction was facilitated when the teacher asked students to work in pairs or in lines. They used oral prompts such as “Discuss with your partner” or “Discuss in your line.” Three other teachers did not show student interactions in either lesson (T5, T6, and T7). These results also strengthen the interview results that knowledge about student interaction as a teaching technique was not familiar among the teachers.

In exploring teachers’ daily teaching activities, pre-training lesson observations data revealed teachers’ efforts to help students thinking. A few asked questions demanded students to think so as to provide the answer. Table 7 shows how often thinking was facilitated by teachers in Lessons One and Two. For example, they used such questions as “Who can give examples of ...?”, “Who can state examples of tools?” and “Who uses this?” However, this was only found for T5 in Lesson One and T7 in Lesson Two. The results indicated that most teachers did not facilitate students in critical thinking, as most of their questions demanded the answers which had been already given by teachers or which were still written on the blackboard.
The pre-training lesson observations also revealed teachers’ activities in the concept of student tasks. Two teachers (T2 and T4) among eight gave tasks to students in Lesson One, and only one teacher (T7) in Lesson Two (see Table 7). These tasks were instructed to be done in pairs or in lines. These results reflected the opposite of the interview results, which indicated that teachers demonstrated a good knowledge about the concept of student tasks; however, their practices indicated that giving tasks was not a familiar practice for these teachers, as it was not practiced by most of them. Table 7 depicts the familiar and unfamiliar activities in Lessons One and Two in terms of numbers.

Table 7. Teachers’ activities in lesson one and lesson two.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Repetition</th>
<th>Questioning</th>
<th>Elaboration</th>
<th>Feedback</th>
<th>Teacher–student interaction</th>
<th>Student thinking</th>
<th>Student tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
<td>L2</td>
<td>L1</td>
<td>L2</td>
<td>L1</td>
<td>L2</td>
<td>L1</td>
</tr>
<tr>
<td>T1</td>
<td>11</td>
<td>9</td>
<td>10</td>
<td>6</td>
<td>9</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>T2</td>
<td>12</td>
<td>10</td>
<td>6</td>
<td>9</td>
<td>6</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>T3</td>
<td>8</td>
<td>11</td>
<td>8</td>
<td>11</td>
<td>8</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>T4</td>
<td>10</td>
<td>14</td>
<td>9</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>T5</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>12</td>
<td>6</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>T6</td>
<td>5</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>T7</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>T8</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>141</td>
<td>111</td>
<td>46</td>
<td>42</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>

In summary, the pre-training lesson observations results revealed that there were familiar teaching techniques that were practiced by most of the teachers, such as repetition, elaboration, and questioning, and while some teaching techniques including feedback, students’ tasks, interaction, and students’ thinking were not familiar, as they were less often practiced. In one way, the results of pre-training lesson observations supported the interview results, and in another way, they indicated a gap between what teachers said they knew in the interview and what they actually did in their daily classroom activities.
6.2 What ALTTs did the teachers use before and after receiving the training for active learning, collaborative learning and feedback?

The answer to RQ2, “What active learning teaching techniques (ALTTs) did the teachers use before and after receiving the training for active learning, collaborative learning, and feedback?”, will be presented in this sub-chapter. Teachers were investigated before and after the training on active learning, collaborative learning, and feedback to find out what ALTTs they were using. The results were analyzed from the data of the first and second phases of observations of teachers’ lessons (in this dissertation, the first and second phases of observations of teachers lessons were also referred to as pre- and post-training video data, or pre- and post-training lesson observations). Teachers’ ALTTs were identified as those activities which led to (1) facilitating student interactions, (2) facilitating teacher–student interactions, (3) facilitating feedback, (4) facilitating task concentration, (5) facilitating students’ thinking, and (6) creating an active classroom environment.

As the second objective of this study was to help teachers develop their ALTTs by using collaborative learning and feedback production in their TLCC, this sub-chapter firstly presents the similarity of ALTTs found before and after the training, secondly presents the results that showed the development of ALTTs after the training, in terms of the quality and quantity, as well as the development of new techniques, and thirdly presents the results that show inconsistency in using ALTTs. The sub-chapter also presents the results from the teacher and student questionnaires about the use of ALTTs after the training.

6.2.1 Similar ALTTs before and after the training

The results of pre- and post-training lesson observations showed that teachers used nearly the same ALTTs before and after the training. Five ALTTs among six which were found in Lessons Three, Four, Five, and Six (after the training) were also found in Lessons One and Two (before the training). These were facilitating task concentration, facilitating students’ thinking, facilitating teacher–student interaction, facilitating feedback, and facilitating student interaction. However, in the lessons before the training, there was no teacher who managed to facilitate all these ALTTs in the same lesson. For example, T6 used only feedback and teacher–student interaction in the lessons before the training. Only T4 and T2 used at least four ALTTs before the training. Table 8 presents the occurrence of ALTTs before
and after the training. These results indicated that these ALTTs were not new because similar ALTTs were found in some teachers’ lessons before and after the training. However, the ALTTs were practiced more in the lessons after the training than before the training.

6.2.2 Quantity development of ALTTs after the training

Most teachers rarely used ALTTs in their lessons before the training (Lessons One and Two), but in lessons Three, Four, Five, and Six (after the training), the use of these techniques developed in terms of number. For example, teacher T1 was only using teacher–student interaction and student interaction in lessons before the training, but in Lesson Six, all six ALTTs were found in her lesson. This quantity development of ALTTs happened with all teachers, although it will be explained later in this sub-chapter that there was a difference in how these techniques were used after the training. These results revealed a quantity development in using ALTTs for all eight teachers in their lessons after the training (see Table 8).

Table 8. Teachers’ ALTTs in lesson one (before the training) and lesson six (after the training).

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Facilitating student interaction</th>
<th>Facilitating teacher–student interaction</th>
<th>Facilitating students’ thinking</th>
<th>Facilitating task concentration</th>
<th>Facilitating feedback</th>
<th>Creating active classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>1 18 2 16 0 17 0 16 0 16 0 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>1 16 1 13 0 17 2 16 3 17 0 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>4 16 3 15 0 16 0 17 4 18 0 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>2 17 3 15 0 9 2 14 1 16 0 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>0 16 4 15 2 15 0 16 2 17 0 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>0 14 3 16 0 16 0 17 4 14 0 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T7</td>
<td>0 16 4 18 0 16 0 16 2 9 0 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T8</td>
<td>2 17 3 16 0 6 0 16 4 8 0 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.2.3 Quality development of ALTTs after the training

The research data on the teachers’ ALTTs collected from the pre and post-training lesson observations showed that teachers’ ALTTs had developed in quality in their lessons after the training. This quality development was ascertained by the way the
teachers used feedback to facilitate interaction and to facilitate thinking or task concentration before and after the training. For example, the use of feedback in lessons before the training was mainly found in appraisal feedback, and very rarely peer feedback. After the training, peer feedback was often used by all the teachers in all four lessons as they guided students to post their tasks on the wall after working in groups, and other students were asked to give feedback on the posted tasks. Table 9 presents the differences of the quality of ALTTs as used by the teachers before and after the training.

Table 9. Quality development of ALTTs after the training.

<table>
<thead>
<tr>
<th>ALTTs</th>
<th>Quality of ALTTs before (B) and after (A) the training</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitating feedback</td>
<td>Self-feedback (BA)</td>
<td>“Very good, clap for her” (BA)</td>
</tr>
<tr>
<td></td>
<td>Teacher feedback (BA)</td>
<td>“We do not write an” (B)</td>
</tr>
<tr>
<td></td>
<td>Class feedback (BA)</td>
<td>“Add ed at the end” (A)</td>
</tr>
<tr>
<td></td>
<td>Rare peer feedback</td>
<td>“All of you correct him” (BA)</td>
</tr>
<tr>
<td></td>
<td>Lots of peer feedback</td>
<td>“Who can help him” (BA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Read the task and try to improve it” (A)</td>
</tr>
<tr>
<td>Facilitating teacher-student</td>
<td>Asking students to repeat after the teacher or do things</td>
<td>“Let us spell together” (B)</td>
</tr>
<tr>
<td>interaction</td>
<td>questions together (BA)</td>
<td>“Only describe the picture” (A)</td>
</tr>
<tr>
<td></td>
<td>Supporting students’ questions (A)</td>
<td>“When you write your points start with a capital letter” (A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Do all your work in the flip chart” (A)</td>
</tr>
<tr>
<td>Facilitating student</td>
<td>Provide task to work in line or very rarely in pairs</td>
<td>“Work in line” (B)</td>
</tr>
<tr>
<td>interaction</td>
<td>(B)</td>
<td>“Work in pairs” (B)</td>
</tr>
<tr>
<td></td>
<td>Provide group work task (A)</td>
<td>“I want you to agree in your group to choose one subject and describe it” (A)</td>
</tr>
<tr>
<td></td>
<td>Insist on cooperation in groups (A)</td>
<td>“You should listen to each one’s idea” (A)</td>
</tr>
<tr>
<td></td>
<td>Insist on listening to each other and sharing idea (A)</td>
<td>“You must decide together what to write” (A)</td>
</tr>
<tr>
<td></td>
<td>Insist on helping each other and making decisions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>together (A)</td>
<td></td>
</tr>
<tr>
<td>Facilitating students’</td>
<td>Very rarely asking to think about the given answer (B)</td>
<td>“Who can give examples of...?” (B)</td>
</tr>
<tr>
<td>thinking</td>
<td>Very often ask to think about the given answer</td>
<td>“What do we need to make our description good” (A)</td>
</tr>
<tr>
<td></td>
<td>Asking questions that need explanations</td>
<td></td>
</tr>
</tbody>
</table>
A

LTTs

Quality of LTTs before (B) and after (A) the training

Examples

Facilitating task concentration

Reminding of the time (BA)

“Two seconds left” (BA)

“Two seconds left” (BA)

Provide time for the task (A)

“You have 10 minutes to do the task” (A)

“You have 10 minutes to do the task” (A)

Insist on task observation or correctness of the task (A)

Make sure of your points and spelling” (A)

“Look at your task carefully before you post” (A)

“Look at your task carefully before you post” (A)

“Look at your task carefully before you post” (A)

Two seconds left” (BA)

You have 10 minutes to do the task (A)

Make sure of your points and spelling” (A)

“Look at your task carefully before you post” (A)

“Look at your task carefully before you post” (A)

“Look at your task carefully before you post” (A)

“Look at your task carefully before you post” (A)

Examples

Creating an active class environment

Guiding students to work in groups (A)

“Now sit in your groups, look at your picture and start to describe it” (A)

“Now sit in your groups, look at your picture and start to describe it” (A)

Guiding students to post and present their task (A)

“It is time to put your task on the wall” (A)

“It is time to put your task on the wall” (A)

“Be ready to present and give feedback” (A)

“Be ready to present and give feedback” (A)

“Be ready to present and give feedback” (A)

“Be ready to present and give feedback” (A)

“Be ready to present and give feedback” (A)

6.2.4 Developing a new technique after the training

The results of the post-training lesson observations showed that new LTTs were found in all the teachers’ lessons after the training. Teachers were trying to create an active environment in which all students in the class would engage, where there would be activities that could be done by students during the teaching process. Students were either guided to work together and present their tasks and to give some feedback. This environment was not found in the lessons before the training. These activities, which were identified as creating an active classroom environment, were new to all the teachers. Additionally, the results indicated that the development of using a new technique was also accomplished by some of the teachers. For example, giving feedback was a new technique for T1, student interaction for T5, T6, and T7, facilitating students’ thinking for all teachers except for T5 and T7, and facilitating task concentration for all teachers except T2 and T4.

These results showed that teachers developed new LTTs in their teaching after the training. Appendices 10–16 show the occurrence of LTTs for each teacher in all six lessons. Figures 6, 7, and 8 are screenshots from the videos of post-training lesson observations, showing students involved in various activities that created an active classroom environment.
Fig. 6. Students working in groups (Image by author).

Fig. 7. Students posting their tasks (Image by author).
Inconsistency in using ALTTs after the training

As presented, the results indicated that there was development of the use of ALTTs after the training in terms of quantity and quality and the development of new techniques for all or some of the teachers. However, additional results showed that this development was not consistent with teachers. For example, T7 practiced more student interaction in Lesson Three than in Lessons Four, Five, and Six. Also, T8 activated students thinking in Lesson Three more than in any other lessons. T1 showed her ability in facilitating teacher–student interaction developed in Lessons Three and Four, did not do it in Lesson Five, but then did it again in Lesson Six. This situation of declining usage after showing some development also appeared with other teachers. The decline and improvement of showing ALTTs was found with all the teachers for some of the ALTTs. In this research, it was not expected for the teachers to use the same number of the ALTTs in all lessons, but the development in the previous lessons and declining usage in the later lessons provided a point for the discussion. Figure 9 illustrates an example of the development and decline of using activating teaching techniques in all six lessons for T1.
Students’ and teachers’ questionnaire responses were analyzed to find what ALTTs the teachers used after the training (RQ2). In the teachers’ questionnaire, teachers’ responses to question 11 (see Appendix 2) were analyzed to see what ALTTs they said they used after the training. This question required teachers to mention any techniques they used that they believed could facilitate active learning in their context. Five ALTTs that were identified in post-training lesson observations were clearly found in the teachers’ responses to questionnaire: feedback, student interaction, creating an active classroom environment, teacher–student interaction, and task concentration. While feedback, student interaction, and creating an active classroom environment were found for all eight teachers, teacher–student interaction and task concentration were found for six teachers. The mention of these ALTTs in the teachers’ responses showed that teachers were aware of their ALTTs while teaching. Teachers believed that by using these techniques they could arouse students’ interest during learning activities. One of the teacher’s responses that indicated the use of ALTTs, such as activating student interaction, was the following:
Yes, collaborative learning, students could participate fully and contribute to the activity. Students got the ability to learn in a team. Every student was free to contribute about the task in group work. (T4)

Another teacher’s response related to creating an active class environment:

Students could actively present their task. (T2)

One teacher’s response indicated that she facilitated teacher–student interaction:

This teaching helped students to feel free to ask questions … it was easier to understand their challenges and support them. (T6)

Another noted how she facilitated task concentration:

... also insisting that they have to do their task. (T3)

Example of a teacher’s response indicating facilitation of feedback:

Using of feedback was helpful. Students enjoyed correcting each task and improving their own. (T7)

To gain more insight into what ALTTs the teachers used after the training, students’ responses to question 8–10 (see Appendix 3) were analyzed. With these questions, students were asked to mention any teacher’s activities that they thought had improved or hindered their learning. In these students’ responses, the identified ALTTs in teachers’ lessons (facilitating feedback, student interaction, teacher–student interaction, task concentration, and creating an active classroom) seemed to be visible ALTTs for most students. All 150 students considered student interaction (working in groups), giving feedback, and creating an active class environment as effective ways of improving their understanding. Additional results showed that 87 students felt that teacher–student interaction and task concentration as done by their teachers were supportive activities to their learning. The availability of these activities in students’ responses indicated the development of the quality of teachers’ activities after the training. This supported the observation data that showed that teachers used and developed these ALTTs in their teaching after the training. One of the students responded positively to the availability of an active classroom environment after the training:

The issue of reading the task while standing in front of the class, posting the task on the wall ... caused me to be more active in the class. (S114)
Another responded to the use of feedback, which was used as an ALTT by the teacher:

This kind of teaching made me more attentive because I knew what I was doing. Previously, I didn’t know even when I or other students made mistakes. (S133)

An example of a student response that showed teachers could facilitate student interaction in lessons after the training was:

Teaching us in groups helped us to understand. We could share our ideas in our groups. (S106)

One student responded about how the teacher facilitated task concentration:

I like that we could finish our work because the teacher was always telling us how much time was left. (S111)

Another response indicated how the teacher used teacher–student interaction:

When we called a teacher to our group, she helped us to understand our task. (S82)

However, some students’ responses communicated concern about the quality of teacher–student interactions. Eleven students’ responses revealed that the quality of teacher–student interaction was not good. These students thought that their teachers were not friendly when they asked questions or that teachers gave more time to the students that they knew better. Two examples of the students’ responses on this issue were:

Sometimes our teacher was not friendly when we don’t understand her explanation, and sometimes she was spending a lot of time with the students she knows. (ST137)

Sometimes teachers are angry when we ask them too many questions. (S145)

The general results of the students’ questionnaire revealed that the use of ALTTs which were analyzed based on teachers’ lesson observations were also observable in the students’ responses. These were related to facilitating feedback, facilitating teacher–student interaction, facilitating student interaction, facilitating task concentration, and creating an active classroom environment.

In summary, the results generated to answer RQ2 showed that the teachers used nearly the same ALTTs before and after the training. However, the results indicated some differences in the use of these ALTTs after the training, such as the differences
in the quality and quantity of the techniques, and the development of new
techniques by all or some teachers. Additionally, the results pointed to an
inconsistence in the teachers’ development in the use of ALTTs, where sometimes
the use declined after showing some development. The same ALTTs found in video
data of lesson observations after the training were also mentioned by the teachers
and students in the questionnaires’ responses. However, the teachers and students
did not point out the activity of facilitating students’ thinking in their responses.
Also, 11 students in their questionnaire responses expressed that they were not
happy with the quality of teacher–student interaction.

6.3 What were teachers’ and students’ perceptions of teaching and
learning before and after using of collaborative learning
activities and feedback in respect to develop ALTTs in their
context?

The results that answer RQ3, “What are teachers’ and students’ perceptions of
teaching and learning before and after using of collaborative learning activities and
feedback in respect to developing ALTTs in their context?”, are presented in this
sub-chapter.

All eight teachers and 150 students were given open-ended questionnaires to
complete after the post-training observations. The questions in both questionnaires
had the intention of examining teachers’ and students’ perceptions of teaching and
learning before and after using collaborative learning activities and feedback in
respect to developing ALTTs in their context. The responses were identified as
teachers’ and students’ perceptions of teaching and learning (1) before the training,
(2) after the training, (3) by using feedback, (4) by using collaborative learning,
and (5) for effective teaching and learning. The questionnaire results showed that
there were similarities and differences in the identified teachers’ and students’
perceptions. There were some positive and negative perceptions shared by teachers
and students, and there were some perceptions found only in teachers’ responses
and others found only in students’ responses.

6.3.1 Teachers’ and students’ perceptions of teaching and learning
before the training

Two kinds of perceptions emerged for the teachers and students in respect to
teaching and learning before the training: a) teachers’ and students’ shared
perceptions and b) students’ perceptions. In the teachers’ and students’ shared perceptions, the results showed that all eight teachers and 144 students among the 150 who responded to the questionnaires had negative perceptions of teaching and learning before the training. Generally, teachers’ and students’ responses associated the teaching and learning processes before this project with difficulty in the aspects of student understanding, student participation, interactions, and task follow-up. The following are the examples of teacher and student responses that indicate their perceptions of the challenges of teaching and learning before the training:

*Before the training, students were not participating [in lesson].* (T2)

*Before this research, teachers were teaching until the end of the lesson, they asked “Who have not understood?”, and no one said anything because the students are not confident enough to say something.* (S150)

When investigating teachers’ and students’ perceptions of teaching and learning before the training, the results also showed that six students had positive perceptions of teaching and learning before the training. These students’ responses indicated that they preferred calm in their classrooms during lessons before the training. To them, students talking and discussing in groups was noisy. The following are the examples of students’ responses indicating their preference for the teaching and learning context before the training:

*It was better before the research ... before the research, it was very cool in the class.* (S145)

*Yes, there is a difference. Before this research, we were all listening to the teacher, and it was good because there was no noise.* (S52)

These students perceived students’ silence during teaching as better learning environment and talking and discussing as noisy.

### 6.3.2 Teachers’ and students’ perceptions of teaching and learning after the training

The open-ended questionnaires results differentiated three kinds of perceptions after the training: a) teachers’ and students’ shared perceptions, b) teachers’ perceptions, and c) students’ perceptions. In the teachers’ and students’ shared perceptions, the results showed that all eight teachers and 144 students perceived that the teaching and learning after the training was effective in teaching and
improving students’ understanding. All teachers and most of the students had positive perceptions of the process of teaching and learning after the training, as it developed student participation. The same aspects found in teachers’ answers were also found in the students’ responses. For example, regarding the effectiveness of working in groups, students expressed how good they felt sharing ideas and producing quality work and how interested they were when in working together or when the teacher asked them to develop their work. Teachers, for their part, mentioned that students were able to correct their own tasks by correcting each other. Teachers also explained that they could plan their teaching and students’ activities. Examples from students and teachers’ responses that indicate their shared perceptions of teaching and learning after the training are as follows:

After the training, students became more aware, and the level of understanding improved. I did not have to make too much of an effort, as the students work as teams and make their learning easy. (T4)

There was improvement in giving their ideas during lesson. Students got experience in giving feedback and improved in sharing ideas. (T6)

It is good because we are sharing ideas, and we see who is writing our ideas and we hear the one who is reading our task. We can understand more, and we are working together. (S39)

In the shared perceptions of teaching and learning after the training, the teachers and students also showed negative perceptions. They were concerned about the opportunity for each student participation and the limited time to perform activities.

The results about teachers’ and students’ perceptions of teaching and learning after the training also contained specific perceptions of students about teaching and learning after the training. Eleven students had negative perceptions in the quality of teacher–student interaction, expressing that they were not satisfied with their teachers’ interaction with them. Examples of students’ responses that indicated their worries about teaching and learning after the training are:

Our teacher did not spend much time in our group. (ST137)

Sometimes the teacher did not answer our questions well. (S145)

The same results of teachers’ and students’ perceptions of teaching and learning after the training also revealed specific perceptions of the teachers. Six teachers said teaching and learning after the training simplified their teaching task, as they were not working as hard and most of the classroom activities were done by
students. One teacher’s response expressed her specific perception of the simplified teaching process after the training:

I don’t spend a lot of time working. Most of the time is used by students working and giving feedback. (T8)

These kinds of perceptions were noted only by the teachers.

6.3.3 Teachers’ and students’ perceptions of teaching and learning by using feedback

When investigating teachers’ and students’ perceptions of teaching and learning by using feedback, it was found out that there were two kinds of perceptions: a) shared perceptions and b) teachers’ specific perceptions. In shared perceptions, teachers and students positively perceived the use of feedback in their context as a good technique because it helped students improve task performance, produce quality work, be aroused to activity, and establish support for each other in improving and defending their tasks. This was found for all eight teachers and 147 students. Examples of teachers and students’ responses that indicated their perceptions of using feedback in teaching and learning are:

Students improved their performance because they were able to notice mistakes and avoid repeating them next time. (T7)

Slow learners could easily learn from their peers during feedback-giving. (T7)

I like this teaching: I will not forget how to write the word “hammer” in our task. We wrote “hamer”, but we were corrected. (S4)

I got more understanding when our fellow students corrected our task. (S8)

The results regarding teachers’ and students’ perceptions of teaching and learning by using feedback also pointed out specific perceptions of teachers. One teacher, who had previously perceived feedback as a good teaching technique, also noticed that some students were less serious during feedback-giving, as they considered it to be fun. For example, the teacher explained that:

Students were making it as a fun. When they corrected other groups’ tasks, even a full stop was corrected! (T3)
In this aspect of teachers’ and students’ perceptions of teaching and learning by using feedback, three students’ responses were not included in the analysis, due to language ambiguity in their responses.

6.3.4 Teachers’ and students’ perceptions of teaching and learning by using collaborative learning

When investigating teachers’ and students’ perceptions of teaching and learning by using collaborative learning, it was found out that there were three types: a) shared perceptions, b) teachers’ specific perceptions, and c) students’ specific perceptions. In teachers’ and students’ shared perceptions, all eight teachers and 142 students had positive perceptions of teaching and learning through collaborative learning. The content of teachers’ and students’ responses indicated that collaborative learning is an effective technique for them. They expressed that students could work together, listen to new ideas from others, share ideas, develop attentive listening, and learn better. Examples of teachers’ and students’ responses that indicated their positive perceptions of teaching and learning by using collaborative learning are:

*Students could learn better during group work through listening to each other.*

(T7)

*I like this teaching because I have learnt many things. Teaching us in groups improved my understanding.*  (S38)

... *in groups, there are so many ideas because there are many students ... some have very good ideas, others are trying; we are learning so many things.*  (S14)

*The good thing in working together in groups is that when I go home, at least I have learnt something.*  (S56)

In the results about teachers’ and students’ shared perceptions, teachers and students also explained their worries about using collaborative learning activities in their context. This was found with all eight teachers and 31 students who mentioned directly their negative perceptions of using collaborative learning. Both teachers’ and students’ worries were related to the same aspect of the quality of students’ participation. Examples from teachers’ and students’ responses that showed their concern about the quality of students’ participation through collaborative learning activities are as follows:
Some students do not participate well during the lesson. (T6)

Some students were not participating in groups as there were large groups. (T4)

Not all students get the chance to participate. The groups are still big. (T1)

If we could use computers, we could all see what is written, and it could be nice. (S148)

Sometimes we do not hear each other because we are so many students. (S97)

Additionally, the results of teachers’ and students’ perceptions of teaching and learning by using collaborative learning revealed that there were specific perceptions of the individual teachers. Two teachers mentioned their negative perceptions of using collaborative learning in respect to student interaction because of students’ behavior. These teachers specified that some students did not participate during working in collaborative groups due to their laziness or bad behavior. Examples of teachers’ negative perceptions about student interaction in collaborative learning were found when they explained how concerned they were when using the technique:

Some students are lazy about participating while working in groups. (T3)

Some students in the groups are not behaving and disturb others during the lesson. (T4)

In the results of teachers’ and students’ perceptions of using collaborative learning, it was also found out that there were perceptions mentioned only by students. Eight students specifically perceived that teaching and learning by using collaborative learning in their context was a challenge for their teachers. These students’ specific perceptions indicated their worries about the physical ability of the teachers to use the techniques. These students mentioned that teachers were getting tired while teaching because of using these techniques. Examples of students’ responses that expressed their perceptions of the challenges of using collaborative learning for their teachers are:

What I see was that teachers were trying hard, and so they were too tired to observe each group. (S20)

Teachers had to speak louder because students were discussing in groups. It could help if they use speakers. (S110)
Additionally, students specifically perceived teaching and learning by using collaborative learning as a challenge to their quality of interaction (student interaction). This was found in 19 students’ responses who explained that collaborative learning could be a challenge for some students who are not talkative, as some other students usually dominated discussions in groups. Examples of student responses that expressed this worry about the quality of interaction as being affected by other students are as follows:

Some are not listening to our ideas. Some think they know better than others. (S1)

Some of us are not listened to in our groups. (S52)

These students’ responses show that the challenges of using collaborative learning in their context are also caused by individual students’ behavior in groups.

6.3.5 Teachers’ and students’ perceptions of effective teaching and learning

All eight teachers mentioned the availability and unavailability of some aspects in their context as challenges to effective teaching and learning. For example, they mentioned large class size, lack of teaching resources, student behaviors, and school and class infrastructure as challenges to their teaching and their students’ learning. Seven teachers specifically stated that collaborative learning and in-service teacher training were important to support their teaching and students’ learning. On the side of the students, 145 out of 150 responded to the item that asked them to give their opinions about effective teaching and learning. Out of 145 students, 121 mentioned class size, lack of resources, and classroom design as challenges to their learning. The aspects of collaborative learning, teacher training, and students’ behavior were pointed out in the responses of 34 students out of 145. Examples of statements made by teachers and students showing their perceptions of effective teaching and learning in their context are the following:

Improve classroom environment by reducing number of students. (T1)

If all teachers in school get this training, students will learn effectively. (T2)

Teaching resources like flip chart pads [and] marker pens can change students learning. (T4)
Teachers should use collaborative learning, as many students are involved and participate in learning. (T5)

Students should be reduced in our class to get more space, and we should be given computers during learning. (S18)

Teachers should be taught how to teach us in groups because we understand better [that way] (S19)

The class should have fewer students and more fans because it is too hot. (T20)

There should be teaching aids and skilled teachers. (S27)

Teachers should always use these techniques of grouping students. (S32)

Table 10 summarizes the results of teachers’ and students’ perceptions of teaching and learning before and after using of collaborative learning activities and feedback in respect to developing ALTTs in their context.

<table>
<thead>
<tr>
<th>Identified perceptions</th>
<th>Teachers’ and students’ shared perceptions</th>
<th>Teachers’ perceptions</th>
<th>Students’ perceptions</th>
</tr>
</thead>
</table>
| Perceptions of teaching and learning before the training (161)
  (related to students’ understanding and teaching activities (155)) | Ineffective lessons when related to students’ understanding and teaching activities (155) | Better classroom environment when related to calm during lessons (6) | |
| Perceptions of teaching and learning after the training (212)
  (related to student participation (167)) | Better lessons when related to student participation (167) | Positive perceptions related to simplified teaching activities (28) | Challenging when related to the quality of teacher student interactions (11) |
| Perceptions of teaching and learning by using feedback (163)
  (related to students’ serious performance (161)) | Better in improving task performance (161) | Challenging related to students’ seriousness (2) | |
| Perceptions of teaching and learning by using collaborative learning (237)
  (related to students’ interaction (163)) | Better lessons when related to students’ interaction (163) | Challenging for students’ behaviors (2) | Challenging for untalkative students (19) |
<p>| | Challenging of participation for all (45) | | Challenging for teachers’ physical ability (8) |</p>
<table>
<thead>
<tr>
<th>Identified perceptions</th>
<th>Teachers’ and students’ shared perceptions</th>
<th>Teachers’ perceptions</th>
<th>Students’ perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptions of effective teaching and learning (171)</td>
<td>Can be effective through in-service teacher training and collaborative learning (42) Reducing class size, availability of resources, and improving classroom design (129)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 The numbers in the brackets indicate the number of the coded items for each content.

Interesting results from teachers’ and students’ perceptions were in their ideas about teaching and learning by using collaborative learning. While teachers perceived collaborative learning as a way to simplify their teaching process because most of classroom activities are done by students, some students perceived the technique as difficult for teachers because they became tired when observing the groups and so had to speak louder. Another interesting result was that there were some students who perceived teaching and learning after the training as not effective due to students talking and discussing, but the same students were very positive when explaining their perceptions of teaching and learning by using the feedback and collaborative learning in their context.

In summary, the results of teachers’ and students’ perceptions of teaching and learning supported by collaborative learning and feedback indicated that all teachers and most of the students perceived collaborative learning and feedback as having improved the teaching practices and students’ understanding. Compared with the teaching and learning before the training, all teachers and most students expressed that the challenge of teaching and learning before the training was the lack of students’ participation. However, all teachers and all students saw that teaching and learning by using collaborative learning and feedback required a more comfortable classroom environment, such as a classroom with a smaller number of students. The results also showed that teachers were specifically concerned with the challenges of using these techniques, such as controlling students’ behavior and seriousness, while the specific concerns of the students were the teachers’ physical ability to use the techniques, as they appeared to be getting tired, and the varying quality of interaction. Additionally, the results revealed that a few students preferred teaching and learning before the training because, according to their responses, after the training, working in groups created noise due to the large class size.
6.3.6 A summary of the main findings

In the findings related to RQ1, “What are the teachers’ knowledge and activities of their daily teaching practices in TLCC?”, the teachers were found to possess adequate knowledge in understanding different teaching techniques, such as types of feedback, questioning, repetition, elaboration, role-play, the concept of student tasks, and the teaching/learning context (this kind of knowledge was found to be familiar among the teachers). They were also found to lack knowledge of collaborative learning (this approach was unknown to all teachers) and to have insufficient knowledge of active learning, student interaction, and types of feedback (these concepts were unfamiliar among the teachers). The results for RQ1 also evidenced that the teachers could not practice at all most of the activities they knew, or they practiced them ineffectively. Practices such as questioning, repetition, and elaboration were the most used and were familiar activities in teachers’ lessons, while activities such as different kinds of feedback, student interaction, students’ thinking, and student tasks were less practiced and were unfamiliar to many of the teachers.

In respect to RQ2, “What active learning teaching techniques (ALTTs) did the teachers use before and after receiving the training of active learning, collaborative learning, and feedback?”, the teachers were found to practice nearly the same ALTTs in their lessons before and after the training. However, there was a clear development of ALTTs exhibited in the lessons after the training. The teachers practiced more and higher quality ALTTs in their lessons after the training than before the training. Additionally, they were able to develop new techniques in their lessons after the training.

For RQ3, “What are the teachers’ and students’ perceptions of teaching and learning before and after using collaborative learning activities and feedback in respect to developing ALTTs in their context?”, the teachers and the students perceived teaching and learning activities as more effective in the lessons after the training than those before the training. Collaborative learning activities and feedback were perceived as good techniques by most teachers and students. However, they mentioned various challenges to effective teaching and learning in their context. Class size, student behavior, school design, and lack of teaching and learning resources were perceived as some of these challenges to teaching and student interactions.
7 Discussion

Teachers' knowledge and classroom teaching activities influence students’ learning (Blömeke et al., 2016; Chapoo et al., 2014; Kleickmann et al., 2015; Sadler et al., 2013). This influence is due to the fact that their knowledge about pedagogy may affect their practices in the classroom (Alisaari & Heikkola, 2017; Mihaela & Alina-Oana, 2015). For example, teachers need knowledge to understand the content of what they want to teach and how to teach it. However, the context of their teaching, such as class size, classroom structure, or unavailability of teaching and learning resources, can obviously affect the implementation of teachers’ knowledge. Thus, the TLCC may become an obstacle for teachers in applying ALTTs. This study investigated the knowledge and practices of teachers who were working in a specific TLCC and supported their practices by applying some pedagogical approaches to develop their ALTTs. In this dissertation, feedback and collaborative learning activities were determined to be the pedagogical approaches that can support and develop teachers’ ALTTs.

The results of this study show that it is not enough for teachers to possess theoretical knowledge of their teaching practice. In this study, despite the teachers showing adequate knowledge of a variety of teaching techniques, such as feedback, questioning, repetition, elaboration, and the concept of student tasks, these teachers could not practice at all or effectively most of those activities in their lessons before the training (RQ1). This study suggests that teachers may have knowledge but may fail to put their knowledge into real classroom practice. Although it has been found that there is a significant association between teachers’ knowledge and instructional practices (Hu et al., 2017), the results of this study indicate that teachers’ knowledge may not influence their classroom activities in some contexts. It is not necessarily true that, when teachers possess knowledge about teaching, their teaching activities will be effective. These findings are in line with what Shulman said about teachers’ knowledge: that there is a difference between “what is meant to know and understand yourself and what it takes to help someone else know and understand” (2000, p. 130). Shulman meant that teachers may possess good knowledge but may fail to use their knowledge in the classroom to support students’ understanding. Connelly et al. (1997) also stressed that the importance of teachers’ knowledge is seen when it is expressed through their practices in teaching. Thus, the results of these studies indicate that possessing theoretical knowledge about instructional methods, techniques, and strategies of teaching is not enough to help teachers perform quality activities in the classroom. The teachers need to understand
practically how to implement their knowledge in the real classroom. However, these results do not imply that teachers can practice well without theoretical knowledge.

Apart from the results of this study showing that theoretical knowledge alone is not enough for classroom practices, the results have underlined the importance of both theoretical and practical knowledge. For example, lack of or insufficient knowledge about collaborative learning and active learning evidenced by teachers in the interview data was also found in their lesson observations. The efforts of a few teachers to use student interaction and student thinking before the training indicated that the teachers have some ideas of good teaching and learning but, as a result of lack of theoretical and practical knowledge, fail to implement them. These trials indicate a gap in teacher training programs. It was expected that if these concepts are in the programs of teacher education, they should be very familiar among these trained teachers. In other words, teachers were trying to practice some techniques in which they did not have effective understanding. This study confirms the the findings of previous studies that teachers’ knowledge is important for effective classroom activities (Blömeke et al., 2016; Chapoo et al., 2014; Hu et al., 2017; Kleickmann et al., 2015; Suh & Park, 2017). These results do not contradict the results discussed in the previous paragraph. While the results in the previous paragraph indicate that teachers may fail to practice their knowledge in some contexts, the results in this paragraph have stressed the existing understanding that it is difficult or sometimes not possible for teachers to practice techniques that they do not understand.

Additionally, the results suggest that pre-training teacher programs are not effective enough in supporting teachers with their ALTTs. All the teachers who participated in this study received pre-training before being employed as teachers. Sometimes, they seemed to understand some techniques but failed to practice these in their lessons before the training. This shows that teacher pre-training programs put more emphasis on theoretical knowledge than on practical knowledge. These results are supported by previous research showing the importance of practical pedagogical knowledge in teacher training programs (Evens, Elen, Larmuseau & Depaepe, 2018; Kajoro, Chirure & Simiyu, 2013; Okpe & Onjewu, 2016; Peercy & Troyan, 2007). Zanzibar education policy also states a number of weak points that face pre-teacher training programs and institutions, leading to challenges in the production of effective teachers (MoEVT, 2006). It is very important for teachers to understand the theory and practice of educational concepts, so as to support their classroom practices.
The findings of this study indicate that the teachers were able to develop their ALTTs after the training. These results stress the importance and power of pedagogical approaches used in this study; active learning, collaborative learning, and feedback activities. For example, active learning has been determined to have positive effects on students’ learning (Akınoglu & Tandogan, 2007; Aricò & Lancaster, 2018; Bakır, 2011; Barker, 2004; Bonwell & Eison, 1991; Kim, Sharma, Land & Furlong, 2013; Michael, 2006). The techniques found in teachers’ lessons, such as facilitating task concentration, thinking, feedback, interaction, and creating an active classroom environment are the indicators of active learning (Akınoglu & Tandogan, 2007; Aydede & Matyar, 2009; Bonwell & Eison, 1991; Felder & Brent, 2009). Feedback is also stated to be a powerful influence on learning (Conroy et al., 2009; Hattie & Gan, 2011; Hattie & Timperley, 2007). In addition, the findings are supported by studies that have found that collaborative learning is a support to teaching and learning processes (Doumanis et al., 2019; Ibrahim et al., 2015; Laal & Ghodsi, 2012). Generally, the results of this study show that by using the approaches of active learning, collaborative learning, and feedback, it is very possible to change and develop teachers’ practices. Apart from being supported by the existing studies showing the importance of active learning, collaborative learning, and feedback in the teaching and learning processes, the salient part of the results of this study is that they show that these pedagogical approaches can be applied even in TLCCs.

This study also investigated teachers’ ALTTs before and after the training of active learning, collaborative learning, and feedback (RQ2). The results indicated that most of the ALTTs identified in teachers’ lessons before the training were also identified after the training, although there were differences in terms of the quality and quantity of the techniques. The availability of the same ALTTs in the lessons before and after the training suggested that these practices are not new to these teachers. These findings suggest that the teachers lacked sufficient in-service training. This is in line with previous studies that have shown the great importance of in-service teacher training programs (Copriady et al., 2018; Çer & Solak, 2018). For example, Copriady et al. (2018) found that all teachers, both experienced and less experienced ones, need in-service training to enhance their proficiency. In the study by Çer and Solak, (2018) it was found that, to improve the education system in low-performing education contexts, it is very important to consider the content and method of in-service teacher training programs. In Zanzibar’s education documentation, especially in educational policy, it is not clear if there are special hours and periods allocated for teacher in-service training. Currently, there are very
few teacher centers used for in-service training, and these centers have faced many challenges in terms of supporting staff, resources, and accessibility (MoEVT, 2006). The results of this study prove that these challenges mentioned in Zanzibar education documents do exist.

In addition, the investigation of teachers’ ALTTs has revealed the major role that teachers play. These findings are in line with the studies showing the role of a teacher in making changes and differences in the whole process of teaching and learning (Aricò & Lancaster, 2018; Hattie, 2003; Sarah, 2010). For example, Hattie (2003) investigated the effects of different factors on students’ learning and found that among all the factors, the major influence on students’ learning outcomes are in the hands of teachers. The fact that, in this study, the teachers could develop their ALTTs after the training while still working in their TLCC proves that teachers can make changes. These findings reinforce the significance of the role played by teachers in supporting students’ learning in different contexts. The primary role of the teachers in this study was also indicated in the results from teachers and students about their perceptions of using collaborative learning activities. While students perceived using ALTTs as difficult for the teachers, the teachers themselves perceived these techniques as a means to simplify their teaching process. It can be assumed that, when teachers are effectively trained and working in conducive classroom contexts, they can teach effectively. Specifically, the context of this study in which the teachers showed the ability to change their teaching activities showed the role of the teachers mentioned in previous studies to be even more significant.

This study has stressed the existing understanding of the effect of class sizes that large class may or may not be an obstacle in the teaching and learning process (Galton & Pell, 2012; Shen & Konstantopoulos, 2017). The fact that the teachers in this study were able to use more and better quality ALTTs after the training confirms that reducing class size is not the only solution for effective teaching and learning. Large class size and lack of resources may interfere with implementing ALTTs, but they do not eliminate the chance for better teaching. However, the results also indicate the need for an effective and conducive teaching and learning context. Some teachers and students have shown negative perceptions of using collaborative learning in their context. Although there is the possibility of improving teaching activities in TLCCs, the fact remains that the teachers and students themselves in this study believe that a small class size, teaching resources, and more convenience in the teaching and learning context would make their teaching and learning activities more effective. These findings are supported by studies that have found large class size to be a challenge (Breton, 2014; Brühwiler
and learning technologies can facilitate effective teaching and learning (Adesote & Fatoki, 2013; Bilyalova, 2017; Ezekoka, 2015; Shieh, 2012). The most positive finding of this study is the understanding that it is very possible for teachers to use and practice interactive teaching approaches even in large classes.

Practically speaking, teachers’ abilities to develop their ALTTs have an important implication for any challenging educational context in the world, and specifically for the Zanzibar Ministry of Education in its efforts to ensure quality education and thus meet its national education goals. The findings indicate that there is a possibility for improving the teaching practices from less active to more active practices that are expected to contribute to students’ progress. The possibility of changing and developing teachers’ activities is the result of having effective teacher training programs. The lack of knowledge on varieties of techniques, and the inconsistence of the teachers’ development in their ALTTs, add to the need for sufficient in-service training for the teachers. Thus, the results have shown the need for effective pre-training and in-service teacher training programs. These programs need to integrate interactive teaching techniques. For example, a study which assessed the teacher education program in East African countries found that there was a need to make those programs more practical (Kajoro et al., 2013). The researchers highlighted the need for more effective teacher education program aspects that must be integrated in teacher education programs. Those aspects include pedagogy and pedagogical content knowledge, inquiry-based learning, collaborative learning, and learner-centered approaches to learning. The recommendation in the study of Kajoro et al. (2013) supports the present study’s practical implication for the need to improve teachers’ practices in the context investigated of this study and other similar contexts.

In addition, the understanding that large class size may or may not be an obstacle for effective teaching practices provides an important implication for the governments in the context of this study and other parts of the world that there is a need to improve teaching and learning contexts. Apart from the pedagogical support for teachers, governments and educational institutions also need to find ways to improve the physical context of the classrooms. This may simplify teaching activities and help teachers to work more effectively.

The lesson from this study also provides an important implication for teachers working in TLCCs. Teachers have the power to change and develop their teaching practices when they get training. Thus, teachers need to learn more so as to understand the new and old approaches of teaching that they can use in their context.
to minimize the effects of the challenging contexts in which they are working. Teachers’ professional development seems to be a major support of teachers practices in different contexts, and this may give the international researchers a point to think about in respect to introducing new educational ideas that can benefit teachers working in TLCCs.

Theoretically, the findings of this study add to existing knowledge about the importance of active learning techniques, collaborative learning activities, and feedback in teaching and learning (Aydede & Matyar, 2009; Conroy et al., 2009; Hattie & Timperley, 2007; Van Leeuwen & Janssen, 2019). It has been shown in this study that the teachers, through the support of these approaches, were able to change their practices from less to more active. This study specifically suggests that these teaching pedagogies are applicable even in TLCCs.

There are also limitations in this study. This study investigated teachers’ knowledge and practices in their everyday class activities and observed teachers ALTTs before and after receiving the training of active learning, collaborative learning, and feedback. A limited number of female teachers (N = 8) and only two schools were involved, which does not represent a large number of teachers who may have different levels of education and teaching experience. Another limitation is that this study did not investigate the applicability of the selected approaches on the students’ side. However, investigating the students’ side would have made this study more complex and taken even more time. This would have made it more difficult for the researcher to handle the process and would, therefore, have impacted the effectiveness of this study.

**Conclusion and recommendations**

To sum up the practical conclusions, the main findings show that teachers find it difficult to put their knowledge into practice, but when supported with pedagogical training, they are capable of developing their teaching practices by applying more ALTTs even in TLCCs. However, a conducive teaching and learning context remains highly important and is considered to be very effective in assuring high quality in teaching and learning. The findings of this dissertation suggest the need for adequate and effective in-service teacher pedagogical training to improve their practices. Additionally, pre-service teacher training needs to be more practical and integrated with effective theoretical and practical teaching pedagogies to equip teachers with the knowledge and skills that can improve their ALTTs. Teaching pedagogies and activities, such as active learning, collaborative learning, and
feedback, seem to support teachers’ practices even in TLCCs. Additionally, this study provides a salient point for educationists, that while other countries are speeding toward the application of advanced learning technology in schools, there are other parts of the world which need pedagogical ideas that can boost teaching to enhance active learning.

In future studies, it would be important to investigate these approaches on the side of students. For example, investigating how students collaborate in such contexts and the direct impacts of teachers’ application of these techniques on students’ learning would be valuable. The involvement of more teachers, schools, and classes is needed for a deeper understanding and more comprehensive contributions to how the practice could be improved. Extra time for data collection and teacher training and more advanced data collection technology would be more effective in collecting data about teachers and students’ activities and their development. The recommended studies might help to reveal more specific areas that need to be improved.
List of references


Appendices

Appendix 1. Interview questions for teachers

1. Can you explain how you normally teach?
2. Do you interact with the students in your class? How?
3. Do you give tasks to your students? Why?
4. If you give tasks to your students, what types of tasks do you give them? Why?
5. Do students interact in your class? How?
6. How do your students work (individually or in groups)? Why?
7. Do you think students understand your aims in lessons? Why?
8. Do students ask questions in your lessons? Why?
9. What do you do if students make mistakes in performing their tasks? Why?
10. What do you think are the challenges of helping students learn in your context?
11. What do you understand about active learning? Can you please provide examples of active learning?
12. What do you understand about collaborative learning? Can you please provide examples of collaborative learning?
**Appendix 2. Questionnaire for teachers**

**QUESTIONNAIRE FOR TEACHERS**

This questionnaire will be administered to all teachers who will participate in the project “Supporting active learning teaching techniques (ALTIs) through collaborative learning and feedback in Zanzibar, a challenging educational context.” This questionnaire will help in the understanding of teachers’ perceptions of using active learning teaching techniques in large classes with limited resources.

You are ensured that your responses will be kept confidential and will only be used for research purpose. You are kindly requested to answer all the questions in this questionnaire.

Your acceptance is highly appreciated! The questionnaire may take 25–35 minutes. Please write your answers in the space given.

**QUESTIONS**

1. Your level of education (Kiwango chako cha elimu) ..........................
   (Examples: certificate/diploma/degree).

2. Years of teaching experience (Miaka yako ya uzoefu katika kusomesha/ualimu) ....................

3. Which class did you teach during this project? (Ulikuwa ukisome sha darasa gani katika kipindi cha utafiti huu?) ................................. (Examples: F1A, STD 6A).

4. Were there any differences in student learning before and after the training? (Jee kuna tofauti yoyote ya namna wanafunzi wanavyojifunza kabla na baada ya mafunzo uloyapata katika utafiti huu?)

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   ............................................................................................................................
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5. If there were any differences, please mention them (and provide examples, if possible) (Ikiwa kuna tofauti yoyote tafadhali elezea na toa mifano)

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   ............................................................................................................................
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6. How do you perceive the technique of grouping students for student learning? (Unaionaje njia ya kuwaweka wanafunzi katika vikundi wakati wa kuwasomesha?)

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7. Did you notice any impact of collaborative methods on student learning? (Jee umegundua faida yoyote ya kujifunza kwa wanafunzi pindi wanapojifunza katika vikundi vya kushirikiana?) ............... 

8. If there was any impact, please describe it (and give examples, if possible) (Ikiwa kulikuwa na faida yoyote tafadhali elezea na toa mifano)

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9. Did you notice any effect of feedback on student learning? (Jee umegundua faida yoyote ya kufanya masahihisho/marekebisho wakati wa kujifunza?) ....................

10. If you noticed any effect of feedback to students learning, please describe it briefly (and give examples, if possible). (Ikiwa umeona faida yoyote ya ufanyaji wa ,marekebisho/masahihisho wakati wa kujifunza tafadhali elezea na toa mifano)

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11. Was there any technique you used in this project that you believe can facilitate active learning in a large class? Give examples, if possible. (Jee kuna mbinu yoyote uliyo tumia katika kipindi cha utafuti huu ambayo unafikiri inaweza kuhamasisha ushiriki wa wanafunzi katika kujifunza? Tafadhali toa mifano)

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............................................................................................................................................
............................................................................................................................................
12. Do you think there are any challenges in implementing collaborative learning activities in large classes? (Jee unafikiri kuna vikwazo vyovyote katika kutumia mbinu ya kusoma kwa vikundi vya kushirikiana katika madarasa makubwa?) .......................... If you believe there are challenges in implementing collaborative learning activities in large classes, please mention them (Ikiwa kuna vikwazo vyovyote katika kutumia mbinu ya kusoma kwa vikundi vya kushirikiana katika madarasa makubwa tafadhili elezea na toa mifano)

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13. Do you think there are any challenges of facilitating feedback in large classes? (Jee unafikiri kuna vikwazo vyovyote katika kutumia mbinu ya kuhamasisha uotoaji na upokeaji marekebisho/mrejesho/masahihisho katika madarasa makubwa?) If there are challenges in facilitating feedback in large classes, please mention them (Ikiwa kuna vikwazo vyovyote katika kuhamasisha uotoaji na upokeaji wa marekebisho/masahihisho katika madarasa makubwa tafadhili elezea na toa mifano)

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............................................................................................................................

14. What do you think should be done to facilitate students’ active learning in large classes? (Unafikiri nini kifanyike ili kuhamisisha ushiriki wa wanafunzi katika kujifunza ndani ya madarasa makubwa?)

............................................................................................................................
............................................................................................................................
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Thank you! The time you spent answering this questionnaire is so much appreciated. You have provided a valuable contribution for the completion of this research!
Appendix 3. Questionnaire for students

QUESTIONNAIRE FOR STUDENTS

With great respect, you are invited to participate in answering all the questions in this questionnaire. This study is being conducted to support teachers’ active learning teaching techniques in large classes with limited teaching and learning resources in Zanzibar schools. The purpose of this questionnaire is to find out students’ perceptions of teaching and learning by using active learning teaching techniques in the context of large class and limited teaching and learning resources.

All the answers you provide, and your identification will be confidential and will only be used for research purposes.

Thank you very much for your acceptance. This questionnaire can take between 25–35 minutes. Please write your answers in the spaces provided for each question.

QUESTIONS

1. Gender ........................................................ (Male/Female)
2. Which class do you study in? ..................... (Examples: F2A, STD 6A)
3. Do you think there were any differences in teaching before and after this project? Please describe the differences and give examples
   ..........................................................................................................................................
   ..........................................................................................................................................
   ..........................................................................................................................................

4. What are your opinions about working together in groups?
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   ..........................................................................................................................................
   ..........................................................................................................................................

5. Do you think working together in collaborative groups supports or hinders your understanding? Please give examples)
   ..........................................................................................................................................
   ..........................................................................................................................................
   ..........................................................................................................................................


6. Explain the feedback (if any) that the teacher gave that supported your understanding. Please give examples
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........................................................................................................................................
........................................................................................................................................

7. Was there any kind of feedback that hindered your understanding? Please give examples
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........................................................................................................................................
........................................................................................................................................

8. Explain how the teacher supported your understanding during teaching. Please give examples
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........................................................................................................................................
........................................................................................................................................

9. Were there any teaching techniques that the teachers used that supported your understanding? Please give examples
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

10. Were there any teaching techniques that the teachers used that hindered your understanding? Please give examples
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

11. What are your opinions about teaching and learning in collaborative groups?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
12. What are your opinions about using feedback for teaching and learning?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

13. What do you think should be done to improve your understanding in this large class?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Thank you! The time you spent answering this questionnaire is so much appreciated. You have provided a valuable contribution for the completion of this research!
## Appendix 4. Coding scheme for the interview for RQ1

<table>
<thead>
<tr>
<th>Category</th>
<th>Description of category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher’s knowledge of specific teaching techniques</td>
<td>Reference to phrase explaining teacher’s understanding of active learning, collaborative learning and feedback (responses to questions 9, 11 and 12)</td>
<td>“That [collaborative learning] is new to me.” “I have heard about it, but not sure, don’t know how to explain, not sure at all” “I always give feedback when they [students] make mistakes.”</td>
</tr>
<tr>
<td>Teacher’s knowledge of other teaching techniques</td>
<td>Reference to phrase mentioning or explaining teacher’s understanding of other teaching activities that are not collaborative learning, active learning, feedback or teaching and learning context</td>
<td>“There are so many techniques I use during teaching, but very often I like to warm up students by asking many questions”</td>
</tr>
<tr>
<td>Teacher’s knowledge of a teaching and learning context</td>
<td>Reference to phrase showing teacher’s understanding of aspects of support or challenges of teaching and learning in a school or classroom context not about teaching methods or techniques</td>
<td>“So many students ... we don’t have teaching aids; it is hard.”</td>
</tr>
</tbody>
</table>
### Appendix 5. Coding scheme for pre-training lessons observations for RQ1

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feedback</strong></td>
<td>Reference to phrases the teacher uses to praise, comment on or improve students’ work or facilitate this information among students</td>
<td>“Well done.” “Correct him.” “That is not correct.”</td>
</tr>
<tr>
<td><strong>Student–student interaction</strong></td>
<td>Reference to phrases used to facilitate students working together</td>
<td>“Discuss with your partner.”</td>
</tr>
<tr>
<td><strong>Teacher–student interaction</strong></td>
<td>For lesson observations data. Reference to phrases used to facilitate student exchanging learning ideas with the teacher, or facilitate students performing learning activity with the teacher’s support</td>
<td>“Let us read together.”</td>
</tr>
<tr>
<td><strong>Student task</strong></td>
<td>Reference to phrase indicating the teacher giving a task to students.</td>
<td>“Answer these questions in your books.”</td>
</tr>
<tr>
<td><strong>Thinking</strong></td>
<td>Reference to the teacher’s speech that leads students to either reason, reflect, search, examine or reconsider a question or statement (not closed questions)</td>
<td>“Try to mention examples of tools.”</td>
</tr>
<tr>
<td><strong>Questioning</strong></td>
<td>Reference to questions the teacher asked that cannot be coded for other categories in this coding scheme.</td>
<td>“Is that clear? Have you understood?”</td>
</tr>
<tr>
<td><strong>Repetition</strong></td>
<td>Reference to the teacher’s speech that reproduces or retells the same thing that the teacher or the students said.</td>
<td>“So a debate is an argument between two sides, it is an argument between two sides.”</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Elaboration</td>
<td>Reference to the teacher’s speech that gives extra information or a summary of what the teacher or the student said.</td>
<td>“With the introduction, we include greeting, and we can greet them [people] by looking to their status, and you can start with top leaders maybe a chairperson, timekeepers, and so on. Also, in the body as a second part is where you can support or oppose and keep your points. And when you explain your points, you should use vivid examples. And, in conclusion you may end by saying thank you”</td>
</tr>
</tbody>
</table>
### Appendix 6. Coding scheme for pre- and post-training lesson observations and open-ended questionnaires for RQ2

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitating student interaction</td>
<td>For lesson observations data—reference to the phrase used to facilitate students working together.</td>
<td>“You should listen to each one’s idea.”</td>
</tr>
<tr>
<td></td>
<td>For questionnaires—reference to explanation about facilitating students working together.</td>
<td>“I gave them the task to work together in groups.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Teaching us in groups helped us to understand. We could share our ideas in our groups.”</td>
</tr>
<tr>
<td>Facilitating teacher–student interaction</td>
<td>For lesson observations data—reference to phrases used to facilitate student exchanging learning ideas with the teacher, or facilitate students performing learning activity with the teacher’s support.</td>
<td>“Read after me.”</td>
</tr>
<tr>
<td></td>
<td>For questionnaires—reference to explanation about the teacher’s support of student learning.</td>
<td>“Do all your work in the flip chart.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I help them in groups on how to write the description.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“When we called a teacher to our group, she helped us to understand our task.”</td>
</tr>
<tr>
<td>Facilitating feedback</td>
<td>For lesson observations data—reference to phrases the teacher uses to praise, comment on or improve students’ work or facilitate this information among students.</td>
<td>“This is written with an s.”</td>
</tr>
<tr>
<td></td>
<td>For questionnaires—reference to explanation about teachers facilitating feedback, task correction.</td>
<td>“Who can give feedback to their task.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I guide them in giving feedback on the”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“This kind of teaching made me more attentive because I knew what I was doing. Previously, I didn’t know even when I or other students made mistakes in task.”</td>
</tr>
<tr>
<td>Facilitating task concentration</td>
<td>For lesson observations data—reference to phrases used to facilitate that students focus on the task performance and completion.</td>
<td>“Look at your task carefully before you post.”</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>For questionnaires—reference to explanation teachers facilitating students</td>
<td></td>
</tr>
<tr>
<td>Capstone</td>
<td>to focus on the task performance or completion</td>
<td>“I insist that they complete their task on time.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I like that we could finish our work because the teacher was always telling us how much time was left.”</td>
</tr>
<tr>
<td></td>
<td>Facilitating students’ thinking</td>
<td>“What do we need to make our description good?”</td>
</tr>
<tr>
<td></td>
<td>For lesson observations data—reference to the teacher’s speech which leads</td>
<td></td>
</tr>
<tr>
<td></td>
<td>students to either reason, reflect, search, examine or reconsider a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>question or statement (not closed questions)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For questionnaires—reference to explanation showing whether students</td>
<td>“It is time to put the task on the wall.”</td>
</tr>
<tr>
<td></td>
<td>were guided either to reason, reflect, examine or reconsider a question</td>
<td>“Present your task.”</td>
</tr>
<tr>
<td></td>
<td>Creating an active classroom environment</td>
<td>“When the teacher asked us to present our task.”</td>
</tr>
<tr>
<td></td>
<td>For lesson observations data—reference to phrases used to facilitate</td>
<td>“Students could actively present their task.”</td>
</tr>
<tr>
<td></td>
<td>students to perform physical activities related to learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For questionnaires—reference to the explanation about teachers facilitating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>physical activities related to learning</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 7. Coding scheme for teachers’ and students’ questionnaires for RQ3

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers’ and students’ perceptions of teaching and learning before the training</td>
<td>Reference for explanation about teaching and learning before the training/research. (Items 4 and 5 for teachers and item 3 for students).</td>
<td>“Before the training, students were not contributing [in lesson].”</td>
</tr>
<tr>
<td>Teachers’ and students’ perceptions of teaching and learning after the training</td>
<td>Reference for explanation of teaching and learning after the training/research. (Items 4 and 5 for teachers and item 3 for students).</td>
<td>“After the training, all the students participated in group work.”</td>
</tr>
<tr>
<td>Teachers’ and students’ perceptions of teaching and learning by using feedback</td>
<td>Explanation about opinions in giving or receiving comments about task performance, task correction and mistakes. (Items 9, 10 and 13 for teachers and items 6, 7 and 12 for students).</td>
<td>“Students improved their performance because they were able to notice mistakes and avoid repeating them next time.”</td>
</tr>
<tr>
<td>Teachers’ and students’ perceptions of teaching and learning by using collaborative learning</td>
<td>Explanation showing the opinions regarding collaborative learning/group learning/working together. (Items 6, 7, 8 and 12 for teachers and items 4, 5, and 11 for students).</td>
<td>“In groups, there are so many ideas because there are many students ... some have very good ideas, others are trying; we are learning so many things. groups.”</td>
</tr>
<tr>
<td>Teachers’ and students’ perceptions of effective teaching and learning</td>
<td>Explanation showing the opinions regarding effective teaching and/or understanding/learning. (Item 14 for teachers and item 13 for students).</td>
<td>“Teaching resources like flip chart pads [and] marker pens can change student learning.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Teachers should be taught how to teach us in groups because we understand better [that way].”</td>
</tr>
</tbody>
</table>
## Appendix 8. Observation tool

Observer
Date
School
Class
Subject
Topic
Teacher
Observation no
No of Students
Time

<table>
<thead>
<tr>
<th>Observation aspect</th>
<th>Availability</th>
<th>Functionality</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative groups</td>
<td>Available?</td>
<td>Working?</td>
<td>Example</td>
</tr>
<tr>
<td>Student participation in groups</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
<tr>
<td>Teacher–student interactions</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
<tr>
<td>Student–student interactions</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
<tr>
<td>Students' concentration during tasks</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
<tr>
<td>Feedback</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
<tr>
<td>Students' thinking</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
<tr>
<td>The creation of an active classroom environment</td>
<td>Available?</td>
<td>Facilitated?</td>
<td>Example</td>
</tr>
</tbody>
</table>
Appendix 9. A sample of the filled observation tool

Observer.............1  Date ...........26th May 2015
School..................1  Class.........std 6
Subject .......English  Topic ........Describing our school
Teacher .............T3  Observation no ......4
No of Students ...........118  Time ........7:55–8:35 a.m.

<table>
<thead>
<tr>
<th>Observation aspect</th>
<th>Availability</th>
<th>Functionality</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative groups</td>
<td>Available? (yes)</td>
<td>Working? (yes) The teacher is guiding students to sit and work in groups.</td>
<td>Example – Students are doing their task in their groups.</td>
</tr>
<tr>
<td>Student participation in groups</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher encourages all students to contribute to their task.</td>
<td>Example – Most students seem to be busy focusing to their group task.</td>
</tr>
<tr>
<td>Teacher–student interactions</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher is insisting the student to ask if they need help.</td>
<td>Example – The teacher is going around the group and talk to students, sometimes answering students’ questions.</td>
</tr>
<tr>
<td>Student–student interactions</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher is facilitating interaction in and working together in groups.</td>
<td>Example – The teacher is insisting to the students to share the ideas and listen to their peers’ ideas.</td>
</tr>
<tr>
<td>Students’ concentration during tasks</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher is insisting students to focus to their task.</td>
<td>Example – The teacher is reminding the students to recheck the accuracy of their task.</td>
</tr>
<tr>
<td>Feedback</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher motivates students to give feedback about other students’ task.</td>
<td>Example – The students are so much excited to correct the task of their peers and receive feedback for their own task.</td>
</tr>
<tr>
<td>Students’ thinking</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher is insisting the students to think about the correctness of the task.</td>
<td>Example – The students are trying to think and give another response.</td>
</tr>
<tr>
<td>Observation aspect</td>
<td>Availability</td>
<td>Functionality</td>
<td>Examples</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>The creation of an active classroom environment</td>
<td>Available? (yes)</td>
<td>Facilitated? (yes) The teacher is motivating students to post and present their task.</td>
<td>Example – The students seem to be active going around the class posting their task and presenting.</td>
</tr>
</tbody>
</table>

**Appendix 10. T2 activities from lesson 1–6**
Appendix 11. T3 activities from lesson 1–6

Appendix 12. T4 activities from lesson 1–6
Appendix 13. T5 activities from lesson 1–6

Appendix 14. T6 activities from lesson 1–6
Appendix 15. T7 activities from lesson 1–6

Appendix 16. T8 activities from lesson 1–6
177. Pirhala, Suvi (2018) Touchable matters: reconfiguring sustainable change through participatory design, education, and everyday engagement for non-violence
179. Juutinen, Jaana (2018) Inside or outside! : small stories about the politics of belonging in preschools
182. Tuomisto, Timo (2018) Kansanopistopedagogiikka kolmessa kristillisä kansanopistoessa
188. Louhela, Helena (2019) Sexual violence : voiced and silenced by girls with multiple vulnerabilities

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Mwanakhamis Ameir

SUPPORTING ACTIVE LEARNING TEACHING TECHNIQUES THROUGH COLLABORATIVE LEARNING AND FEEDBACK IN ZANZIBAR, A CHALLENGING EDUCATIONAL CONTEXT