



An investigation of Cooperative Learning in a Saudi high school: A case study on teachers' and students' perceptions and classroom practices

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Abstract

The aim of this study is to investigate the perceptions of Saudi high school teachers and their students about cooperative learning. It also investigates teachers' classroom practices based on the five cooperative learning (CL) principles (Johnson & Johnson, 2014). Most empirical studies in the field focus on assessment instead of examining attitudes and perceptions. The improvement of teachers and learners' understanding of CL and its implementation is, however, unlikely to be achieved if researchers are only concerned with achievement. Moreover, only a few studies have been conducted in the Middle East and in traditional lecture-style contexts, such as Saudi Arabia, where CL is still considered a new teaching method. The current study was conducted in one state all-male high school in Saudi Arabia. The participants were eight teachers who received in-service teacher training on using CL based on Johnson and Johnson's model and who have been using CL for more than one year, along with their 97 participant-students in Years 10, 11 and 12. The data comes from individual semi-structured interviews, a questionnaire and classroom observations. The findings indicate that all teachers and the majority of students in this investigation showed positive attitudes towards CL and prefer it to lecture-style lessons. The findings suggest that training in cooperative learning is important to help teachers change their practice and their perceptions of classroom roles, responsibility and authority. However, there are considerable initial challenges when teachers change from lecture-style to CL. Furthermore, there are some challenges and difficulties in implementing CL in the Saudi context, such as curricula and the assessment system. Nevertheless, CL training and implementation in the Saudi educational context could promote the development of new communities of practice. It could also create communities of learning among students, thus helping them with their academic and social learning and shaping their identities.

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List of Abbreviations

CL	Cooperative Learning
MOE	Ministry of Education
CPD	Continuing Professional Development
INSETT	In-Service Teacher Training
ZPD	Zone of Proximal Development
CoP	Communities of Practice

Chapter 1: Introduction

1.1 Introduction

Over the last three decades, cooperative learning (CL) approaches have been widely researched and a number of studies indicate the effectiveness of using this approach to improve learners' social and academic performance when working in small cooperative groups (Cavanagh, 2011; Farzaneh & Nejadansari, 2014; Gillies, 2008; Johnson et al., 2010; Law, 2008). These studies have been conducted in classes in a number of Western countries, such as Australia, England, Mexico and the USA (Blatchford & Kutnick, 2003), with a few studies conducted in the Middle East (Sarkhouh, 2007; Shaiban, 2009), in the hope of developing and reforming educational practices and policies. However, many teachers and learners still have difficulties and doubts about implementing CL productively (Blatchford & Kutnick, 2003; Johnson & Johnson, 2014; Jolliffe, 2011). A previous literature review on cooperative learning shows that most empirical studies in the field focus on assessment, with only a few studies in the area of attitudes and perceptions (Kyndt et al., 2013). Improving teachers and learners' understanding of CL and its implementation is, however, unlikely to be achieved if research only focuses on achievement.

Conversely, it is necessary to consider teachers and learners' perceptions in order to have a better understanding of how CL can work in classrooms to produce more desirable influences. Moreover, there is still some disagreement about under what classroom conditions cooperative learning can lead to a more desirable impact, such as the improvement of students' social and academic learning. Additionally, further studies still need to be carried out on the effectiveness of using CL in teaching different subjects in diverse contexts (Kagan & Kagan, 2009; Rittschof & Griffin, 2001; Slavin, 1996b).

In Saudi Arabia, according to Alhaidari (2006), classrooms rely heavily on lecture-style transmission and memorisation. In the classroom, students generally work individually and competitively in order to earn rewards. However, Alsayegh (2007) argues that knowledge-transfer teaching methods and theories are no longer enough to prepare students to face the challenges and changes of an international society or to teach the skills needed for the contemporary labour market. In the last decade of the twentieth century and the first decade of the twenty-first century, economic systems, as well as socio-cultural contexts, have changed due to a number of factors such as technology, globalisation and

economic competition (Alhadi, 2013). As a result, educators have been advancing new ideas and concepts in the field of education related to knowledge and the important skills individuals need to learn (Alsayegh, 2007). However, in order to change the education system in any part of the world, it is essential to re-evaluate the teacher training and education programmes. In addition, the context and the knowledge that is taught, as well as the approaches to teaching and learning, should change (Pellegrino & Hilton, 2012; Alhadi, 2013). Supported by the developments in teaching and learning theories, a change from a teacher-centred to a student-centred approach could be achieved with consistent teacher training and education programmes focusing on collaborative and cooperative teaching methods. Moreover, a number of researchers and educational authorities have called attention to the importance of implementing new educational practices, such as cooperative learning, instead of continuing to employ direct instruction (Alakili, 2011; Alhadi, 2013; Alsaleh, 2003).

As a result, some teachers working in high schools in Saudi Arabia have received in-service teacher training, provided by the Local Department of Education, based on Johnson and Johnson's model of using cooperative learning (Johnson et al., 2008). This department was established by the Ministry of Education (MOE) and locally supervises the implementation of educational plans and programmes approved by the Ministry of Education in the light of national educational objectives, rules, regulations and policies (Local Department of Education, 2013). These teachers have been using cooperative learning for one and half years in their classes.

The aim of the present study is to investigate the extent to which continuing professional development (CPD) training may have affected these teachers' perceptions regarding the use of CL in such traditional lecture-style context. It also aims to find out to what extent participant-teachers understand Johnson and Johnson's five principles of cooperative learning (Johnson et al., 2008) (see Section 2.4.2, pp. 42-44) and how cooperative learning can be structured and implemented to lead to expected results. The present study investigates their students' perceptions of whether creating a CL classroom environment can help them to improve their learning academically and socially. The research is conducted as a case study at a Saudi state high school located in the eastern area of the country.

This topic has been chosen for a number of reasons. Firstly, there are educational aspects since it could be helpful to know whether CL can have an impact on what teachers

who are familiar with traditional teaching methods plan and do in their lessons when attempting to use it. Secondly, in academic terms, studies on the use of CL in Saudi Arabia are considered to be still in their infancy (Alakili, 2011; Algarfi, 2010). To the best knowledge of the researcher, this could be the first study in the country to investigate the perceptions of teachers who have received training on implementing CL with their students based on Johnson and Johnson's model of using cooperative learning (Johnson et al., 2008), in high schools. The findings of the present study could help improve the CL training programme and identify the factors that can affect teachers' implementation of cooperative learning. Furthermore, the results of the present study can possibly inform practices in other schools in Saudi Arabia since all schools in the country follow the same system and processes in terms of the assessment, curriculum and teacher training (Alhogail, 2011; Alnaji, 2014). Finally, this study is related to the researcher's job as a student-teachers' supervisor at a Saudi university. Gathering this information will help the researcher know teachers' and students' opinions about using CL approaches at high schools and to what extent this approach can affect teaching and learning. The findings of this study may help teacher-trainers make future decisions on whether student-teachers at the university need to be trained to implement this method as part of their initial teacher training and what this training should comprise.

1.2 Research gap and questions

In Saudi Arabia, the country in which the present study is based, few studies have been conducted on CL and most of them are Master's dissertations (King Fahad National Library, 2015). The majority of these studies focus on the assessment and the influence of the cooperative learning approach on students' attainment using experimental designs in different curricula and stages of the Saudi education system. For example, Alreshidy (2008) conducted a study to examine the effect of CL on students' achievement in Mathematics in secondary all-male schools in Hail, in the western part of the country. The participants were 60 students divided into two groups (30 in the control and 30 in the experimental one). The researcher found that the CL approach increased the achievement of the learners in the experimental group more than in the control group, which confirms the findings of the researchers from other Arabian countries mentioned above.

Similar results were achieved by Batoot (2006) in a study carried out with female second-grade intermediate students in the Embroidery Unit, also in the western part of the

country. The research explored the impact of CL strategy on academic achievement in two randomly selected classes, and the results indicate that, although there were no significant differences between the two groups in terms of cognitive development, there were important differences between them in relation to the development of embroidery skills. Alrehaily (2000), on the other hand, aimed to examine the effect of using CL in science teaching on developing the upper cognitive abilities of second-year intermediate students as measured by the upper cognitive levels achievement test according to Bloom's taxonomy (Bloom et al., 1956). The research sample was 109 female students divided into three groups (first experimental, second experimental and third control). The experiment lasted two weeks and the findings indicate the superiority of students in the CL groups (with and without feedback for some cooperative skills) in developing upper cognitive abilities when compared with students taught by the traditional method.

Although the studies mentioned above all showed positive results in favour of CL, Almufadda (2006) found no evidence that the cooperative learning approach had any advantages over more traditional teaching methods. He aimed to investigate the influence of CL in comparison with lecture-style on students' attainment in grade 11 in the Islamic curriculum. The key data collection tool was also pre- and post-test with control and experimental groups (46 male students for each group). The results indicated that the students' attainment in the control group (lecture-style) was considerably better than the students' attainment in the experimental group – the one using CL.

While the majority of studies in the country discussed here have indicated positive results in relation to achievement when using CL in comparison with traditional methods, some of these studies still argue that there is a need for further research on the cooperative learning approach in different stages and curricula (Aljaser, 2002; Alreshidy, 2008). The disparate findings may have been the result of different teaching contexts, different research methods employed, and the various processes of using cooperative learning adopted in each investigation. In the Saudi context, what distinguishes the present study is its focus on teachers who received in-service teacher training on using CL based on Johnson and Johnson's model of using cooperative learning (Johnson et al., 2008), as well as their students' perceptions, as the basis upon which this investigation is conducted. Moreover, this study, unlikely most research in the field conducted in Arabic countries, is concerned with perceptions, experiences and teaching practices instead of focusing on performance and achievement.

Considering the reasons for conducting this study, as stated above, and the gaps in the literature, this study attempts to answer the following questions:

1. What are the perceptions of cooperative learning by participant-teachers who received training on it?
2. Which teaching practices do participant-teachers currently employ when facilitating cooperative learning work in the classroom?
3. What are participant-students' perceptions of the benefits and challenges of cooperative learning?

1.3 Definition of terms

In the present study, the term *cooperative learning* is considered to be a teaching method. It is understood as learners working together in groups in order to accomplish specific goals through activities that are structured, controlled and directed by the educators. This concept is discussed in more detail in Section 2.4.2 (pp. 39-41).

The term *lecture-style* is also considered to be a teaching method. It emphasises the active role of the educator where the teacher usually delivers information, explains content and asks students comprehension questions. Students passively listen to their teachers and only participate when the teacher asks them a question. This concept is discussed in more detail in Section 2.4.1 (pp. 38-39). In the present study, the terms *lecture-style*, *direct teaching*, *traditional method* and *lecturing method* are used as synonyms.

Another important aspect of this study is the teacher education. In this investigation, this refers to *in-service teacher training* (INSETT) or *continuing professional development* (CPD). This can be either formal, when it is organised by educational institutions, or informal, when it happens collaboratively and naturally among teachers. These terms are further discussed later in Section 2.7.3 (pp. 73-75).

1.4 Research context

1.4.1 A brief history of the education system in Saudi

In Saudi Arabia, the first local education authority was created in Mecca in 1926 (MOE, 2015) and this was the first step towards the creation of a national educational system. This department aimed to build schools in Mecca and administer the teaching and learning

process in them. In 1928, according to Alhogail (2011), the foundation stone of the Saudi education system emerged when an education council was opened in Mecca as well. In 1926, 12 primary schools were opened (Alsonble et al., 2008). In 1927, the first secondary school was opened and the aim of this school was to prepare and train students to be teachers and teach in primary schools. In 1935, the first high school was opened and the aim of this school was to prepare its graduates to study abroad at universities (Alhogail, 2011). Students who graduated from secondary school could study in high school. After three years, when they graduated from high school, some of them would travel abroad to study at universities. It has not been allowed for male and female students to be taught in the same school and they have to be taught separately (MOE, 2015). In 1941, the first girls' school was opened by the Saudi government in Jeddah. By the end of 1941, according to Alhammed et al. (2004), other girls' schools were opened in different cities such as Riyadh, Medina, Mecca and Dammam.

In 1951, the Saudi government officially established the Ministry of Education; the first Minister of Education was King Fahad (MOE, 2015). This ministry only monitors and supervises the education of male students in different levels - pre-schools, primary schools, secondary schools and high schools. In 1960, the General Presidency for Girls' Education was officially established by the Saudi government in order to monitor and supervise girls' education from pre-schools to high schools (MOE, 2015). In 2002, this body was officially integrated into the Ministry of Education with the aim of supervising and monitoring learning in the whole country and improving the quality of the educational system (MOE, 2015). The Ministry of Education seeks to meet the objectives of the Saudi educational policy, which are as follows:

The objectives of the Saudi educational policy are to ensure that education becomes more efficient, to meet the religious, economic and social needs of the country and to eradicate illiteracy among Saudi adults. There are several government agencies involved with planning, administrating and implementing the overall governmental educational policy in Saudi Arabia (Saudi Arabian Cultural Mission, 2013).

The Ministry of Education has established 45 Local Departments of Education in different cities in Saudi Arabia; (Alnaji, 2014); this study takes place in one of them. They locally supervise the implementation of educational plans and programmes approved by the Ministry of Education in the light of national educational objectives, rules, regulations and policies (Local Department of Education, 2013).

1.4.2 The current education system

The education system in Saudi Arabia is highly centralised and under the control of the Ministry of Education (MOE). Such system is very hierarchical and bureaucratic with administrative control, national educational policy-making decision processes, and educational provision all being established at high governmental level (MOE, 2015). The MOE controls the managerial aspects of the educational provision, such as the national education budget, the appointment of teaching staff, timetabling, monitoring the school administration, the evaluation of teachers' performances, and the provision of in-service training in primary, secondary, and high school. It also determines the aspects related to pedagogy and methodology, such as the national curriculum, syllabus, and textbooks for all levels of education in the country apart from universities. The MOE also regulates the assessment system and students' progression (Alaqeel, 2013; Alsonble et al., 2008). At local level, schools have very limited autonomy and authority to intervene in institutional aspects of schooling. This present state of high centralisation of the educational system has provided some stability and continuity in terms of national education; however, it has also led to little educational change and little development in the adoption of new educational practices and pedagogical approaches (Alsayegh, 2007).

In Saudi Arabia, education in the general stages (Table 1.1, below) is free for students between the ages of six and 18 (MOE, 2015). Students who graduate from high school and would like to become teachers can study at university for a Bachelor's degree that usually takes four years to complete and is free tuition (Alhogail, 2011). Before starting to study at university, students must determine their major (e.g. Arabic, history, sciences) and they have the choice of two paths: academic or education. Individuals following the academic path focus on acquisition of knowledge on the subject matter but do not study teaching methods, whereas individuals following the education path receive training on teaching methods in addition to the subject knowledge content (Alsonble et al., 2008). However, the pre-service training in general does not seem to prepare and provide teachers with the knowledge, information and suitable understanding of new teaching and learning methods (Alaqeel, 2013). Furthermore, Algarfi (2005) conducted a study to investigate the difficulties that teachers believe prevent them from using cooperative learning in their classes. This study includes 35 Islamic Culture teachers in Saudi Arabian schools. The findings indicate that the pre-service training at university is considered to be insufficient to prepare teachers to use new teaching methods, such as cooperative learning.

After graduation, teachers working at schools tend to receive in-service training as a form of continuing professional development in different areas according to decisions on training made by local education departments. These local departments arrange in-service training programmes and send official communication to schools in order to find whether teachers are interested in attending the proposed training sessions. All teachers working in a given school are eligible to attend the in-service training offered. In-service training is not compulsory and teachers are free to select and volunteer to participate in the programmes available. Nonetheless, teachers are encouraged to engage in CPD and receive certificates of attendance, which, in turn, give participants points that can be used for career progression (Alaqeel, 2013).

According to Alsonble et al. (2008), one of the main aims of CPD is to prepare and train teachers on new teaching methods. However, in general, the in-service training in Saudi Arabian schools does not seem to help teachers to use new teaching methods or provide them with sufficient knowledge and information to implement such methods in their classes (Alsonble et al., 2008). This is confirmed by a study carried out by Alhejaili (2009) to investigate the point of view of 497 Saudi teachers of mathematics about the current use of constructivist theory principles in classrooms and the obstacles they encounter when they try to apply them. The findings indicate that the CPD programmes do not focus on topics that are related to new teaching and learning methods, such as cooperative learning, but they are related to other issues such as time management, using technology and subject knowledge. In addition, these programmes usually focus on theoretical concepts but fail to deal with practical aspects that might help teachers implement these approaches in their classes.

According to the latest statistics from 2014, there were 245,842 male teachers and 300,750 female teachers in Saudi Arabian general education (MOE, 2015). With regard to students (2014), there were 2,570,334 male and female students in primary schools, 1,230,557 male and female students in secondary schools and 1,214,084 male and female students in high schools. In addition, there were 18,710 female schools and 16,039 male schools in Saudi general education.

Table 1.1: Saudi general education stages

Stage	Age level	Length of stage - in years	Official document
Primary school	6-12	6	Primary education certificate
Secondary school	12-15	3	Secondary education certificate
High school	15-18	3	High education certificate

Source: MOE (2015).

Education is not compulsory in Saudi Arabia, which means that students are not obliged to attend school and/or can withdraw from it whenever they choose. Moreover, every educational institution in the country is single-sex, even at university level (MOE, 2015). The Ministry of Education has total control over the educational system, which means that all schools follow the national curriculum and that materials for every subject are selected and published by the MOE and given free to learners every term (MOE, 2015). Although the content of the subjects is different from one stage to another, the subjects are still basically the same in all stages. Subjects taught include languages, religion, science, mathematics, sports, arts and history. The academic year is divided into two terms of 14 weeks each. Each lesson last for 45 minutes and teachers should cover the whole of the relevant textbook during a term (MOE, 2015). As for assessment, continuous assessment is used in Saudi primary schools to assess pupils' performance and teachers have to fill in performance scales forms for each learner in their class. These performance scales consist of a checklist of skills pupils are expected to demonstrate (MOE, 2010). However, in Saudi secondary and high schools, assessment relies on examination. In each term, there are two exams, a mid-term and a final exam (MOE, 2015). Students are awarded a grade at the end of each year based on their examinations results. The condition for moving to the next educational stage is to pass the exams. Students can enter secondary school if they hold a primary school certificate and also enter high school if they have a secondary school certificate (Alhogail, 2011).

1.4.3 The main aims of high school education

Since the site of this investigation is a high school, it is important to consider the national learning aims and objectives for this educational stage. According to Alaqueel (2013) and Alhogail (2011), the main aims of Saudi high school education are:

- To provide students with the general concepts of the Islamic culture.

- To train students on research skills and develop their scientific thinking skills.
- To enhance students' general skills as appropriate to their age.
- To enhance students' social awareness to avoid negative thinking and ideas.
- To create an environment that can provide students with good and useful experiences to help them in the future.
- To enhance students' awareness of family life aspects, such as responsibilities, obligations, good relations, rights and respect.
- To prepare students to complete their studies at university level.
- To prepare students who do not want to go to university to join the Saudi work market.
- To promote social skills, such as cooperation, doing charity work, organising work and giving assistance.
- To encourage and make students familiar with using the internet, library and technology.
- To help students think critically and promote their skills in observation and analysis.
- To teach students linguistic skills and foreign languages, such as English.

Although the aims of high school education mentioned above include the development of certain skills, such as research skills, cooperation, social skills and scientific and critical thinking, using a lecture-style approach and relying on this teaching method cannot help and support students gain and achieve these objectives (Alsayegh, 2007). This kind of teaching method relies on teachers transferring knowledge to students, and individual learning for tests or examinations, which can lead students to focus on knowledge and memorising skills more than other skills (Almaliki, 2010). As a result, there is a need to implement alternative teaching methods in Saudi schools, such as cooperative learning, in order to help learners gain personal and social skills and achieve the aims mentioned above.

1.4.4 The relevance of change and development in Saudi schools

In Saudi Arabia, the Ministry of Education has total control over the school educational system. Hamroun (2009) claims that, although the Ministry of Education has made some efforts to reform the Saudi education system and improve the quality of the learning outcomes, there is no effective implementation of these efforts in the field. According to Hamroun (2009), the Ministry of Education's centralist approach may be the reason for the

current lack of changes. For instance, the current educational system (the programme of teacher education and training, curricular materials, and the methods of teaching and learning) has not changed for many years and school regulations have been basically the same for more than 25 years (Algarfi, 2010; Alsayegh, 2007).

According to Alsayegh (2007), educational systems in Saudi schools face many challenges. For example, technology is not often used in learning because it is either not available or teachers do not know how it could be used. Teachers at schools and universities still use traditional teaching methods, such as lecture-style, which are no longer enough to provide educators with the important tools to support their students. As a consequence, the students who graduate from these schools and universities generally fail to meet the requirements of the job market. These traditional teacher-centred methods do not seem to be enough to prepare students for real life and future professional performance (Algarfi, 2010). The traditional methods rely on teachers transferring knowledge to students, and individual learning for tests or examinations. Although Saudi educators may be familiar with the concept of student-centred learning, new methods of teaching such as dialogue, thinking critically and cooperative learning are still not frequently used. Almaliki (2010) conducted a study involving 95 students in a secondary school to investigate their perceptions of the teaching strategies and assessment methods that were used by their teachers. The findings showed that these teachers usually used lecture-style and that cooperative learning was very rarely adopted.

However, it could be argued that education in Saudi Arabia should be following the trend in educational changes happening in other parts of the world. In recent years, the development and reform of education has been considered the main focus of government policy in a number of countries (Levin, 2001). According to Hargreaves (1998), economic growth and competition, in addition to globalisation, have played a crucial role in educational change. In the last decade of the twentieth century and the first decade of the twenty-first century, economic systems, as well as socio-cultural contexts, have changed due to a number of factors such as technology, globalisation, and economic competition (Algarfi, 2010; Alhadi, 2013). As a result, educators have been advancing new ideas and concepts in the field of education related to knowledge and the important skills individuals need to learn (Alsayegh, 2007).

In response to these challenges, education systems have been affected in many aspects, such as teacher training, curriculum materials, methods of teaching, and the

learning environment at schools and universities. According to Alsayegh (2007), traditional teaching methods and theories are no longer enough to prepare students to face the challenges and changes of an international society and to teach the skills needed for the contemporary labour market. The International Society for Technology in Education (ISTE, 2007, p. 6) indicates that there are a number of differences between traditional classrooms environments and modern classroom environments, as outlined in the following table (Table 1.2).

Table 1.2: Traditional and modern classroom environments

Traditional environments	Modern environments
Teacher-directed, memory-focused instruction	Student-centred, performance-focused learning
Lockstep, prescribed-path progression	Flexible progression with multi-path options
Limited media, single-sense stimulation	Media rich, multi-sensory stimulation
Knowledge from limited, authoritative sources	Learner-constructed knowledge from multiple information and sources and experiences
Isolated work on invented exercise	Collaborative work on authentic, real-word projects
Mastery of fixed content and specific process	Student engagement in definition, design and management of projects
Factual, literal thinking for competence	Creative thinking for innovation and original solutions
In-school expertise, content, and activities	Global expertise, information, and learning experiences
Stand-alone communication and information tools	Converging information and communication systems
Traditional literacy and communication skills	Digital literacy and communication skills
Primary focus on school and local community	Expanded focus including digital global citizenship
Isolated assessment of learning	Integrated assessment for learning

Source: Adapted from the International Society for Technology in Education (ISTE, 2007, p. 6).

The differentiation between traditional and modern classroom learning environments indicated above suggests that changes have been made in order to prepare learners for life so that they gain the skills needed nowadays. In the case of Saudi Arabia, some of these proposed changes still need to be implemented. Supported by the developments in the teaching and learning theories, a change from a teacher-centred to a student-centred approach could be achieved with a consistent teacher training and

education programme focusing on collaborative and cooperative teaching methods and use of new technologies in education. The development of creative and critical thinking skills can be promoted through activities that foster interdependence and student engagement in cooperative situations (Svalberg, 2012).

On the other hand, changes in the assessment and paths of progression cannot be reformed without implementing significant changes in a school's rules and regulations, which in turn are determined at national level by the Ministry of Education. Many aspects of education, such as teaching methods, curriculum development, assessment, teacher training and finance, are in the process of being reformed and developed (Levin, 2001). However, effective educational change is not easy or simple to accomplish, so it is important to investigate what is happening in schools at both the local and national levels (Fullan, 2007).

Educational change is problematic because it is not a single entity but consists of three different dimensions (Fullan, 2007). The first is related to new materials, which can reflect changes in the curriculum and advances in technologies. The second dimension is new teaching approaches, such as teaching strategies or activities. The third aspect is a change of beliefs, such as new theories that can lead to a change in policies. All these factors are important in order to achieve educational aims. Therefore, teachers can play an essential role in changing and implementing innovative educational practices (Bakkenes et al., 2010). For example, using collaborative and cooperative methods could help students to gain the skills needed nowadays and promote lifelong learning (Zepke & Leach, 2010). Pellegrino and Hilton (2012) list the essential skills for students to succeed in education, work and other areas of adult responsibility in the twenty-first century; they include problem solving, critical thinking, collaboration (working in a group), motivation, effective communication, learning to learn, persistence, creativity, innovation and understanding other cultures.

However, in order to change the education system in any part of the world, it is essential to re-evaluate the teacher training and education programmes in order to develop the skills mentioned above. Therefore, the context and the knowledge that are taught and the approaches to teaching and learning should change (Pellegrino & Hilton, 2012; Alhadi, 2013). Such changes can be initiated in two different ways, either top-down - when the drive for change comes from the educational authorities and should then be adopted by

teachers and schools - or bottom-up - when the process is initiated by the teachers, learners and/ or the school management (Fullan, 2007).

In the context of this study, the process of change has happened in both ways, with the Local Department of Education embracing the idea of adopting CL and providing the necessary training, and the teachers volunteering to engage in the training programme, which shows their willingness to change their current teaching practices. Therefore, some teachers working in high schools in Saudi Arabia have received training to use CL, provided by the Local Department of Education, based on Johnson and Johnson's model of using cooperative learning (Johnson et al., 2008). This two-way process seems to be more effective than when change happens in a single direction (Guri-Rosenblit, 2002), as is the case in the previous studies conducted in Saudi Arabia and previously mentioned (Section 1.2, pp. 12-13). Therefore, there is a need to investigate whether and to what extent this process of change affects participants when they attempt to move from traditional teaching methods (lecture-style) to cooperative learning in order to develop and reform learning.

1.4.5 The outlines of the in-service training programme

The Department of Education has adopted cooperative learning as a teaching method to be applied in a scientific and practical way in some schools (Local Department of Education, 2014). As a result, certain stages were followed. Firstly, a team formed by an education supervisor, a school principal and a vice principal aimed to identify cooperative learning and enable that team to master it through the following actions: reading the cooperative learning book (Johnson et al., 2008) and discussing its main ideas in periodically held sessions, and visiting a private school in a different city that has applied cooperative learning for a long time, to benefit from their experiences (Local Department of Education, 2014). The outputs of this stage were to set the strategies that can enable teachers to use cooperative learning based on a long term training programme that includes training programme, follow-up, evaluation and providing feedback, using workshops, practice lessons and exchange visits between teachers in order to ensure that the teacher continues to apply high-quality cooperative learning.

The second stage was to prepare a teacher development programme in cooperative learning to train a number of local teachers to become experts in CL. The output of this stage was to produce a number of teachers who are now experts in cooperative learning. Therefore, some of these newly trained experts would in turn become trainers themselves and could then offer training in cooperative learning, whilst others would serve as models

for other trainee teachers. These trainee teachers could visit the expert teachers in their classes to learn how they could effectively implement cooperative learning (Local Department of Education, 2014). In the third stage, those new CL teacher trainers and models would deliver a cooperative learning programme to a group of 20 teachers from different schools. Participation in the CL programme was not compulsory; teachers volunteered for that and all teachers in the selected schools were eligible to attend. Seven of the trainee teachers were the teacher-participants in the present study.

The 20 teachers followed the following process to enable them to use cooperative learning (Local Department of Education, 2014):

1. Watching practical lessons on cooperative learning presented by expert teachers before attending a training programme.
2. Watching some video clips about cooperative learning and CL skills.
3. Attending the first phase of the cooperative learning training programme (12 hours/three days) (Table 1. 3, below).
4. Participating in Workshop 1, which addressed the challenges that may face the trainee teacher at the beginning of the application.
5. Observing the trainee teachers to evaluate their cooperative learning practice and provide feedback (twice in semester one and twice in semester two).
6. Participating in Workshop 2, which focused on training students on cooperative learning in general and on social skills in particular.
7. Exchanging visits with targeted colleagues (peer observation).
8. Attending the second phase of the cooperative learning training programme (six hours/two days) (Table 1.4, below).
9. Continuing the exchange of visits among teachers.
10. Participating in Workshop 3, in which the teachers discussed and shared their views with each other about their use of cooperative learning.
11. Receiving certificates for attending the programme.

Table 1.3: The first cooperative learning training programme in the first semester

Day	The programme content	Support means and methods
1	<ul style="list-style-type: none"> ▪ (Introduction) a brief history of cooperative learning and the need to implement it in Saudi schools. ▪ The definition of cooperative learning, the types of cooperative learning groups and group work. ▪ The difference between cooperative learning environment and traditional learning environment (individual and competitive learning) (theoretical roots of cooperative learning). 	Using cooperative learning with the trainee teachers during the training programme
2	<ul style="list-style-type: none"> ▪ The five key principles of cooperative learning. ▪ The importance of students' training on the basic social skills required for cooperative groups before using cooperative learning. ▪ The benefits of cooperative learning (to the teacher, the student and the classroom environment). 	+ Handouts +
3	<ul style="list-style-type: none"> ▪ The role of students in cooperative learning. ▪ The role of the teacher in cooperative learning (determining the instructional materials and designing the task, group composition, arranging the class, explanation of the cooperative task and the importance of providing practical examples for students at the beginning, monitoring, intervening and the assessment of group work. ▪ Obstacles and challenges that teachers can face when starting to use cooperative learning. 	PowerPoint + Video clips

Source: Local Department of Education (2014).

Table 1.4: The second cooperative learning training programme in the second semester

Day	The programme content	Support means and methods
1	<ul style="list-style-type: none">▪ Reviewing the five key principles of cooperative learning and the essential structures of cooperative learning.▪ Reviewing the role of the teacher in cooperative learning.	Using cooperative learning with the trainee teachers during the training programme + Handouts + PowerPoint + Video clips
2	<ul style="list-style-type: none">▪ Reviewing the role of students in cooperative learning.▪ Discussing the problems and challenges that the teachers faced when they implemented cooperative learning.	

Source: Local Department of Education (2014).

According to the Local Department of Education (2014), the general objectives of the training programme are:

1. Deploying a cooperative learning culture in the educational environment properly.
2. Creating active and interactive learning that raises students' motivation to learn and makes them the centre of the educational process.

The specific objectives of the training programme are that, after completion of the training programme, the trainee teachers should be able to:

1. Understand cooperative learning as presented in the scientific brochure of the training programme.
2. Determine the difference between the cooperative learning environment and the traditional learning environment.

3. Accurately determine the difference between cooperative learning groups and other kinds of groups.
4. Accurately recognise the five key principles of cooperative learning in a scientific way and the essential structures of cooperative learning.
5. Form cooperative learning groups effectively and easily.
6. Train students in the basic social skills required to work in cooperative groups.
7. Recognise the role of the teacher in cooperative learning correctly.
8. Identify the obstacles and the challenges of cooperative learning application as mentioned in the scientific brochure of the training programme.
9. Plan and prepare for a lesson using cooperative learning.

1.5 Overview of the Chapters

This chapter has provided the introduction to this study. It presented the research questions and discussed the importance of addressing them in order to fill the research gap later identified in Chapter 2. It also provided a definition of the key terms used in this study. Most of the chapter was devoted to the presentation of the research context: the historical aspects related to the Saudi educational system and its current configuration, the main aims of high school education, and the relevance of change and development in Saudi schools. The final section presented the outlines of the in-service teacher training programme on CL that was delivered to most of the participant-teachers in this investigation.

Chapter 2 is the literature review and it aims to examine the current knowledge in the field of CL knowledge and practice and identify potential gaps in CL research. It starts with a discussion of the main learning theories that are relevant to the topic of this investigation and the social theories that underpin the practice of cooperative learning teaching. This is followed by a section on teaching approaches with a focus on lecture-style and cooperative learning. The chapter continues with an analysis of the benefits of implementing cooperative learning as well as its drawbacks, and the challenges and barriers to CL implementation. This is then followed by a discussion of CL teaching practices, teachers' and students' roles, the importance and characteristics of teacher-training programmes, and the relationships between educator's beliefs and classroom practices.

Chapter 3 deals with the research methodology. It restates the research questions and then considers the theoretical aspects related to research approaches and design. It looks in more depth at case studies and discusses issues regarding reliability, validity and

trustworthiness. This is followed by a presentation of the research sampling, methods of data collection and data analysis. It concludes with a consideration of research ethics.

Chapter 4 presents the research findings. It starts by providing information on the research setting and then presents the results in relation to the research questions considering participant-teachers' perceptions and classroom practices, and participant-students' perceptions of CL.

Chapter 5 is a discussion of the findings presented in the previous chapter. It discusses both teachers' and students' perceptions of CL and its implementation in relation to the literature review. It also discusses the CL classroom practices, the adoption of cooperative learning in traditional educational contexts, and the creation and development of communities of practice in such contexts.

Chapter 6 concludes this study. It summarises the main findings and contributions of the investigation. This is followed by a discussion of the limitations of the study. It also presents its implications and recommendations for the Saudi educational context as well as suggestions for further research. It concludes with a brief consideration of how to disseminate the study findings.

Chapter 2: Literature Review

2.1 Introduction

This chapter reviews the literature on the main areas that are directly related to cooperative learning. It starts with a discussion of general major learning theories and the social theories that underpin the practice of cooperative learning teaching. It then looks at teaching approaches, including cooperative learning (CL). The following section deals with the academic and social advantages of CL as well as the drawbacks and challenges of implementing it. The chapter then moves on to discuss aspects related to the teacher's role and teaching practices and techniques. It follows this with an examination of teacher training programmes and their impact on teachers' beliefs and practices in the classroom. This is followed by a discussion of students' classroom group interaction.

2.2 Major learning theories

A number of learning theories have emerged in the field of education over the years, with behaviourism, cognitivism and constructivism (Muijs & Reynolds, 2011) being largely accepted as the three major ones. Generally, it can be said that these three theories try to clarify the way individuals learn and propose recommendations for educational practice (Schunk, 2014).

Pavlov (1934), Skinner (1938) and Thorndike (1932) developed the theory of *behaviourism* in the 1920s and 1930s. Behaviourists were interested in how punishment and rewards could be used to change students' behaviours and facilitate the learning process, which they saw as a series of negative or positive responses to stimuli (Schunk, 2014; Muijs & Reynolds, 2011). Behaviourist theories are frequently related to individual responses; however, some researchers have proposed their application in collective terms when working in cooperative groups (Bandura, 1977). Behaviourism mainly focuses on students' behaviours more than on the thinking process; it concentrates on individuality, and indicates that changes in behaviour could be the most relevant outcome of the learning process when pre-set, repeated feedback is provided (Muijs & Reynolds, 2011). The influence of behaviourism can be seen in the stimuli-response pattern of classroom interaction that characterises the traditional lecture-style approach, with the lecturer

providing the input and students taking notes and reproducing the same information in the exams.

Conversely, *cognitivism* focuses more on the learner's thinking processes than on behaviour (Burger et al., 2007), attempting to recognise what occurs inside the student's mind to understand how learners receive, store and use information (Leonard, 2002). For cognitivists, learning is not concerned with what students do but with what students know and how they come to obtain knowledge (Jonassen & Land, 2012). For cognitivists, knowing these mental processes is essential to know how learners learn. Although there are substantial differences between behaviourism and cognitivism, both emphasise the role of environmental conditions in facilitating learning, since explanations, demonstration and using examples for clarification all contribute to guiding learners' learning in both theories.

Constructivism, on the other hand, focuses on the role of knowledge construction (Schunk, 2014), as it argues that knowledge is not dependent only on input but has to be internalised. Experiences play an essential role in leading students to build their knowledge through a learning environment that must be active and organised. The experiences of teaching and learning should be structured to challenge learners' thinking so that they can construct new knowledge that is located within a social and physical context (Mittendorf et al., 2005; Vygotsky, 1978). Muijs and Reynolds (2011) indicate that constructivist authors have provided a number of strategies that could be implemented in the constructivist classroom. These methods are: modelling (showing students how to think about or perform a difficult task); scaffolding (providing support between teacher and students and between students themselves); coaching (support students while they are solving a problem); articulation (students express their ideas); reflection (students reflect on their activities); collaboration (students work with each other); exploration; and problem-solving activities. It could be noted that in a constructivist framework knowledge is not seen as transferable from teacher to students but is constructed by students themselves.

While constructivism puts an emphasis on each individual's learning experience, there are still different viewpoints on how people learn in social relationships, from a "reconstruction of the external world", the "development of cognitive abstraction", or "interactions between persons and the environment" (Schunk, 2014, p. 234). However, some researchers (Feldman, 1994; Wenger, 1998) call attention to the greater importance of group experience by arguing that improving learning does not depend only on individuals "capturing, codifying and documenting knowledge" (Mittendorf et al., 2005, p. 299). These

individuals also share, discuss and change knowledge together by actively participating and developing a sense of commitment and belonging (Handley et al., 2006) to their social communities. Individuals' identities and values can thus be constructed through shared experiences with others in multiple communities (Wenger, 1998). Such communities can be "intentionally set up by an institution" (Busher et al., 2014, p. 804) or emerge naturally as 'communities of practice' (Wenger, 1998) but both emphasise the "importance of collaborative cultures" (Busher et al., 2014, p. 805). Classrooms as learning communities should promote learning not only as "individual sense-making" through "thinking and reflection" but also as social construction of knowledge (Watkins, 2005, pp. 47-48).

There are a number of differences between the three learning theories discussed above. In terms of learning outcomes, behaviourism and cognitivism see specific outcomes from learning and teaching processes as determined before the classroom activities take place. In contrast, from a constructivist viewpoint, outcomes are unlikely to be predicted since learning depends on the interaction among students and this is affected by a diversity of factors, such as the learning environment and group relations (Larsen-Freeman & Cameron, 2008), instead of only the input provided by the teacher. Learning should thus be supported by teaching, instead of pre-determined by it (Jonassen & Land, 2012). In addition, for behaviourists and cognitivists the focus is on environmental influence and how knowledge is acquired, whereas for constructivists the focus is on learners and human factors as the basis for learning (Schunk, 2014). As a result, from a constructivist perspective, learning relies on students' activities and the teaching style should support students to carry out these group activities, which may lead to knowledge building, critical thinking, communication skills and discovery (Jonassen & Land, 2012) instead of focusing on individual learning processes.

According to Schunk (2014), educators who follow the constructivist theory in their classroom should provide a positive learning environment where the learners can freely express their points of view and interact both with their teachers and amongst themselves. Teachers should create classroom situations that encourage students to engage actively with content by using manipulation of materials and social interactions. As a result, learners could effectively construct new skills and knowledge. In addition, the new concepts should be connected with the students' previous experiences or what they already know (Çakir, 2008), because learning is considered contextualised and people learn in relation to their perspectives (Muijs & Reynolds 2011). The authors add that teachers should motivate

students to explore and think positively about the content rather than quickly move from topic to topic. Furthermore, educators are required to provide students with formative feedback, assist them to reflect on what they have been doing, and motivate them to develop positive interdependence (Smith, 2008). The educators' role is thus that of facilitator, consultant and resource person, whereas the students' role in constructivist classes is no longer to listen passively to their educators and follow a traditional teaching and learning structure. Students can contribute to the activities and the process of learning, discuss new content in group work, and use their problem-solving and thinking skills.

2.3 Theories that underpin cooperative learning

Although constructivism sheds light on some teaching methods, such as cooperative learning (Schunk, 2014), there are theoretical developments that advocate the importance of the social environment in developing students' cognitive structures and providing theoretical frameworks for cooperative learning as an instructional method. Socio-constructivism and socio-cultural theories are, therefore, considered further advances in constructivist theory and social interdependence theory (Deutsch, 1949).

Socio-constructivism

The essential premise of Piaget's work and constructivist theory was to study how children can develop and learn. He built his theories from observing children to understand the way they think and solve problems (Piaget, 2001). In Piaget's view, cognitive development is not about adding new ideas and facts to the current store of knowledge but about the thinking process and using tools to shift thinking. This leads children from different ages to have different opinions and views of the world (Piaget, 2001). According to Piaget, there are three main elements that affect children's cognitive development: maturation, activity and social transmission (Muijs & Reynolds, 2011). *Maturation* is "the unfolding of biological changes that are genetically programmed into us at birth" (p. 23). *Activity* is the condition under which children's maturation increases, their skills and abilities develop, which leads individuals to interact with their environment and learn from their actions. This kind of learning could lead to change in children's thoughts and in their thinking process. The final factor is *social transmission*, which means the state in which individuals interact with others and learn from them. Consequently, the level of children's learning relies on their developmental stage. One of the aims of this study is to examine whether similar

cognitive and social transmission development can be observed with older learners working in cooperative groups.

A component of Piaget's perception on learning has been termed 'socio-cognitive conflict' (Webb & Mastergeorge, 2003). According to Dillenbourg et al. (1996, p. 4), 'socio-cognitive conflict' in Piaget's view is "conflict between different answers based on different centrations, embodied socially in the differing perspectives of the two subjects". Dillenbourg et al. (1996) add that some heterogeneity among students in the group is required in this kind of conflict. In other words, Piaget's socio-cognitive viewpoint stresses that individual differences are also related to the individual's cognitive development, which in turn is influenced by social interaction. Piaget emphasises that students can benefit from resolving cognitive conflict (Dillenbourg et al., 1996). According to Webb and Mastergeorge (2003), such conflict can increase when learners note a contradiction between their current information and what they experience from negotiating with each other to answer a question or solve a problem. When learners attempt to resolve the conflicting perspectives, they re-examine their own ideas and beliefs to obtain new knowledge. The authors emphasise that, "[d]uring peer interaction, students speak at a level that other students understand, challenge each other and try to reconcile contradictions, take feedback from other students seriously, and accept communication and corrections from other students" (Webb & Mastergeorge, 2003, p. 76). All these aspects can play an essential role in indicating the effectiveness of cooperative work. Svalberg (2012) argues that group work can create cognitive conflict, which can serve as motivation to engage students in in-depth discussion that leads to knowledge creation.

Socio-cultural theory

Socio-cultural theory is based on Vygotsky's point of view that individuals can create and develop their cognition in social interaction (Schunk, 2014). Vygotsky (1978) points out that, in the cooperative learning environment, learners can exchange their knowledge and ideas and then organise these ideas to attain their shared educational goals by, for instance, attempting to solve a problem. In addition, Vygotsky indicates that, when group members discuss and interchange knowledge through social interaction, learning can take place. Vygotsky observed that, when his students were working on their own on a task, they did not perform as well as when they were working in a cooperative environment (Narayan et al., 2013). Vygotsky emphasises the interaction between culture and the social context to develop cognition. Culture can provide cognitive tools, such as language and cultural

history (Narayan et al., 2013), whereas the social context means organising group activities that can contribute to the thinking process.

According to Schunk (2014, p. 244), “cognitive change results from using cultural tools in social interactions and from internalizing and mentally transforming these interactions.” An individual’s cultural development can appear on two levels: the social level between individuals (*interpsychological*) and later inside the person (*intrapsychological*) (Vygotsky, 1978). According to Dillenbourg et al. (1996, p. 5),

[t]his is his “genetic law of cultural development”. Internalisation refers to the genetic link between the social and the inner planes. Social speech is used for interacting with others; inner speech is used to talk to ourselves, to reflect, to think. Inner speech serves the function of self-regulation.

As Piaget, Vygotsky emphasises the role of activity in learning. When people learn, they cannot be passive; instead, they should be active to build their knowledge and understanding of information through social interaction. Vygotsky is known for creating the concept of the “zone of proximal development” (ZPD), which could be defined as the distance between what a student may achieve alone and what she or he may attain with help from a more capable individual. For instance, this could occur when there are negotiations between learners, when a student who has more experience assists a less capable learner to resolve a problem or perform a task that the less competent student is unlikely to achieve without assistance.

According to Webb and Mastergeorge (2003), this kind of interaction between learners is termed *scaffolding*. Svalberg (2012) discusses the idea of scaffolding by indicating that, when students talk to each other about academic tasks, learning opportunities are very likely to be maximised and that students would learn by scaffolding and discussing in heterogeneous groups. Interacting with educators or the explanations that are provided by skilled students can lead students to learn more effectively. According to Powell and Kalina (2009), positive situations are essential for creating effective scaffolding where learners want to learn and the educators or skilled students are willing to support learning. However, if participants refuse to do so, the scaffolding will not be effective. Similarly, another situation non-conducive to learning occurs when educators prevent class discussions, discouraging learners from becoming involved in an academic dialogue, which is essential to create opportunities for learners to express their knowledge and ideas

about a topic without fear or feeling they have to provide expected responses (Van de Pol et al., 2012).

The major similarity between Vygotsky and Piaget is that both emphasise the importance of the social environment and social interactions in developing cognition and knowledge. Therefore, students should be active to develop their knowledge, understanding and skills instead of passively receiving and memorising the knowledge that is transmitted by others (Webb & Mastergeorge, 2003). Learners construct knowledge and meaning and review their thinking through interacting with others and discussing and explaining others' viewpoints, sharing information and negotiating behaviour in their own context (Webb & Mastergeorge, 2003).

On the other hand, there are some differences between Vygotsky and Piaget. First of all, Vygotsky paid attention to the social aspects of learning and the essence of interaction with a living representative of the culture, whereas Piaget paid strong attention to developmental learning, the essence of individuals' development and the relationship of that to their learning (Muijs & Reynolds 2011). For example, Piaget emphasised that children's cognitive development mostly determines what learning can take place, while Vygotsky believed that social learning has to happen before cognitive development (Narayan et al., 2013). Another difference, according to Webb and Mastergeorge (2003), is that, in Vygotsky's view, when members of a group discuss, give and receive explanations, only the less capable student is likely to benefit from the discussion and interaction with the more capable learner. The argued reason for this is that the skilled student is supposed to have mastered the topic or material already and so this skilled student is not likely to benefit from the discussion. However, in Piaget's view, group work provides opportunities for all learners to learn and their relationships are supposed to be equivalent and mutual. Therefore, when students in a group give and receive explanations, this discussion is very likely to be beneficial for all of them.

Vygotsky's and Piaget's theories are not without criticism. Blatchford et al. (2003) claim that these theories have concentrated on cognitive development and are limited in respect of the non-cognitive outcomes of cooperative learning such as interpersonal relations and self-esteem. As a result, these theories are not likely to do justice to the enormous potential of cooperative learning. Experimental studies, on the other hand, can show the non-cognitive aspects of cooperative learning (Law, 2008; Moreno, 2009; Tran &

Lewis, 2012) and occasionally recognise the advantages of competition between the groups of students.

Social interdependence theory

Social interdependence theory is considered the essence of cooperative learning as it helps us understand key factors, such as positive interdependence or group goal, individual accountability, promotive interaction, social skills and group processing. It is based on the major premise that how the educator sets the goals for each class determines how students can interact with each other (Johnson et al., 2010). It advocates that the basis of cooperative efforts among the members of the group is genuine motivation, which can be produced by interpersonal elements and shared desire to attain a significant goal (Johnson et al., 2010). Johnson and Johnson (2014) claim that implementing this theory in education can lead learners to be actively involved in the learning environment and to attain several academic goals simultaneously. Moreover, individual differences can be accommodated and various social problems can be addressed.

In an early study, Deutsch (1949), developing the ideas of Lewin (1935), investigated the relationship between members of a small group of individuals and developed the cooperation and competition theory that can explain the interactions in the group. Deutsch (1949, p. 133) identified two types of interdependence: *promotively* (positive) and *contriently* (negative), as outlined in the following table (Table 2.1).

Table 2.1: The implications of promotively and contriently interdependent goals

Promotively Interdependent Goals	Contriently Interdependent Goals
If A, B, C, etc., does not obtain his goal, X does not obtain his goal	If A, B, or C obtains his goal, Y does not obtain his goal
X obtains his goal only if A, B, C, etc., obtain theirs	Y obtains his goal only if A, B, C, etc., do not obtain theirs
A, B, C, etc. obtain their goals only if X obtains his	A, B, C, etc., do not obtain their goals if Y obtains his

Source: Adapted from Deutsch (1949).

Deutsch (1949) hypothesised that positive interdependence can produce three psychological processes that individuals of a cooperative group can encounter. Firstly, *substitutability*, which means the interdependence created in a cooperative group when individuals work together and share the work so the effort is not duplicated. The second

psychological process is positive *cathexis*. It refers to the energy and effort that an individual puts into a task to achieve his or her objectives in a group – not only for his or her individual benefit, but also for all members of the cooperative group. The third psychological process is *inducibility*. It means the willingness of a member of the group to influence or be influenced by other individuals working with him or her in the cooperative group. Negative interdependence is very likely to produce no substitutability, negative cathexis and a resistance effect. However, the three psychological processes could disappear in a no-interdependence situation. According to Johnson and Johnson (2014), Deutsch later extended the social interdependence theory to contain trust, conflict resolution and systems of distributive justice.

Deutsch's theory has been developed and applied widely to education (Johnson & Johnson, 2009) where individual learning outcomes are influenced by the learner's own actions and others' actions (Johnson & Johnson, 2014). In addition, Johnson and Johnson (2014) point out that there are three kinds of social interdependence:

a) *Positive interdependence* (i.e., cooperation, promotive interdependence): when the structure of the situation leads to a positive relation between individuals' goal achievements, each individual is aware that the only way to reach his or her goals is if other members of the group also achieve their goals. As a result, individuals can seek outcomes that are beneficial to all their group members who are cooperatively linked to work with them, so the actions of participants can promote the attainment of joint goals.

b) *Negative interdependence* (i.e., competition, contrient interdependence): when the structure of the situation leads to a negative relation between individuals' goal attainments, each individual is aware that the only way to reach his or her goals is if all the others with whom he or she is competitively connected fail to attain their goals. Therefore, the actions of participants can obstruct the attainment of joint goals.

c) *No interdependence* (i.e., individualism, independence): this occurs when the structure of the situation leads to no relation between participants' goal achievements as participants are aware that the attainment of their goals is unconnected with others' goal attainment. Therefore, participants can seek to obtain the outcomes without concern for others' outcomes.

Social interdependency theory also has a connection with the social theory of learning that informs the concept of communities of learning (Wenger, 1998) where individuals learn, make meaning and create their identities working in organised groups.

2.4 Teaching Approaches

The learning theories discussed above have profoundly affected educational practices (Schunk, 2014). A number of teaching methods are now available to practitioners and can be implemented in classrooms, such as lecture-style (direct instruction), discussion and debates, problem solving, personalised learning and cooperative learning. It can be argued that teaching approaches that apply direct instruction are highly influenced by behaviourism and cognitivist theories (Muijs & Reynolds, 2011), whereas cooperative learning is seen to have its foundations in constructivism and developments in social-constructivist, social-cultural and social-interdependence theories.

2.4.1 Lecture-style (direct instruction)

According to Muijs and Reynolds (2011), *direct teaching* emphasises the active role of the educator (teacher-centred learning), who is considered fundamental to bringing the content of the lesson to learners by using the whole-class teaching approach. They note that this kind of teaching approach has been widely used by teachers in many teaching contexts for a long period of time. Educators usually deliver information, explain content and ask students comprehension questions. Educators set learning aims and inform students of what they want them to attain (Moore & Hansen, 2012). Students passively listen to their teachers and only a small percentage of the lesson is likely to be retained (Wolff et al., 2015). In addition, using direct teaching does not provide learners with an opportunity to ask teachers questions, especially when the educator is in the middle of the explaining or talking (Moore & Hansen, 2012). Consequently, if at any stage of the lesson students do not understand a concept that is introduced by the teacher, they are very unlikely to understand any of the material or content that follows. Furthermore, research on the lecture approach points out that students' concentration and attention can reduce dramatically after 10 – 20 minutes of continuing educator discourse, and they could shift their attention and thoughts to other things that are not strictly relevant to the content of the lecture (Cuseo, 2007). This may cause students to feel bored in class and perceive the lesson as ineffective (Muijs & Reynolds, 2011).

On the other hand, there are some studies that claim that direct instruction methods, also known as a whole-class teaching approach, can lead to substantial gains on standardised attainment. This can happen if teachers effectively use a number of behaviours, such as “clearly structured lessons”, “clear, structured presentations”, appropriate pacing, “modelling”, “use of conceptual mapping” and “interactive questioning” (Muijs & Reynolds, 2011, pp. 39-42). One of these studies was carried out on teachers’ behaviours by Nye et al. (2004) using a quasi-experimental method. This included dividing students into two groups: one group was taught by traditional direct teaching while the other was subject to enhanced direct teaching methods. The findings suggest that students who were taught by using the enhanced direct instruction approaches outperformed the students who were in the other group. However, it should be noted that these are comparative studies between the traditional and the enhanced direct teaching methods with a focus on students’ achievement. A comparison between direct instruction approaches and other teaching methods, such as cooperative learning, is likely to lead to different results.

2.4.2 Cooperative learning

Various attempts have been made to define cooperative learning (CL). Kagan and Kagan (2009) define CL as a general underlying structure applied to group activities, which can be replicated in any classroom situation. Educators (Slavin, 2011; Farzaneh & Nejadansari, 2014) emphasise the group work aspect of cooperative learning and argue that it includes small groups of students with diverse abilities, talents and backgrounds who work together as a team in order to complete tasks, to solve problems and to attain shared goals. Johnson and Johnson (2014) also argue that in cooperative learning classes students should work together in order to maximise each other’s knowledge and achieve a shared goal. Learners search for outcomes that are valuable to all, negotiate material with each other in order to help one another understand the task and content, and encourage hard work. In the present study, the term cooperative learning is understood as learners working together in groups in order to accomplish specific goals through activities that are structured, controlled and directed by the educators.

Although the terms ‘cooperative learning’ and ‘collaborative learning’ have been often used to indicate working together, there are differences between them that should be essentially understood by teachers (Oxford, 1997). Both cooperative and collaborative learning emphasise the importance of active learning, which is essentially different from a

more traditional lecture-style classroom where teachers deliver information and students passively receive it. Since the 1990s, educators working with such approaches have stressed the learners' responsibility to take charge of their learning, the role of teachers as facilitators, and the creation of learning situations where learners discuss ideas and carry out tasks in small groups (Matthews et al., 1995).

On the other hand, there are important differences between them. Oxford (1997, p. 443) differentiates between the two terms by indicating that cooperative learning, as compared with collaborative learning, is considered more structured, more prescriptive to teachers about classroom techniques, more directive to students about how to work together in groups, and more targeted. In addition, the techniques of cooperative learning are socially and psychologically structured in order to assist learners to work together to achieve group goals. However, collaborative learning is more related to the philosophy and theories underpinning the creation of knowledge as a social construction than to techniques (Oxford, 1997). Panitz (1999) supports Oxford's view by pointing out that collaborative learning is not only a class technique but also a personal lifestyle and philosophy of interaction where it is people's responsibility to take charge of their actions, including learning in groups and respecting one another's contributions and abilities. On the other hand, cooperative learning is a set of techniques that assist learners in a class to discuss and interact with each other to attain a group goal that is usually in regard to a particular content. In addition, cooperative learning tends to be more controlled and directed by the educator.

Matthews et al. (1995) provide some practical classroom examples to help differentiate between cooperative and collaborative learning. For instance, in CL classes learners need to be trained in small team social skills, whereas in collaborative learning it is expected that learners already know and have these skills, naturally enabling them to achieve their goals. Another example is that cooperative learning activities are structured, with each member of the group having a special role, whereas in collaborative learning learners organise and negotiate their roles themselves. In addition, in CL classroom environments, the educator monitors, listens to and intervenes in the teamwork if it is necessary, whereas in collaborative learning classes, students are not closely observed by the teacher, who helps them only when asked to do so. More recent research (Jolliffe, 2010) agrees with previous researchers but adds that, although asking students to work in groups is a popular classroom practice in the UK, this does not necessarily mean that they

are working cooperatively because cooperative learning must be structured and related to pre-determined factors, such as Johnson and Johnson's (2014) five principles (see Section 2.4.2, pp. 43-44), that can facilitate its implementation.

The present study is predominantly concerned with the implementation of cooperative learning in an educational context where the majority of teachers at schools and universities still commonly use the traditional style of teaching and learning. In Saudi Arabia, direct teaching has historically been the dominant teaching approach. As a rule, teachers deliver information and completely control the classroom, while students receive the information and are only allowed to participate in class if the teacher asks them (Alhaidari, 2006). However, the structure and techniques in 'cooperative learning' seem to be more appropriate to the Saudi context than those in collaborative learning since teachers can, through cooperative tasks, help students to gradually shift from a traditional teaching style to a new style of learning. Although 'cooperative learning' is student-centred, the learning environment is still controlled by the teacher.

Another notion closely related to cooperative learning is the concept of communities of practice (CoP). In their seminal work, Lave and Wenger (1991) propose the concept of communities of practice and situated learning to explain the interactions individuals create in groups in order to engage in activities in their everyday lives. Wenger (2011, p. 1) has defined communities of practice as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly". He argues that CoP have three basic characteristics: domain, community and practice. Domain refers to shared interest among community members and implies a commitment to common values and knowledge. Community means that members regularly engage in activities and discussions that help them share information on their domain of interest. Practice refers to developing a "shared repertoire of resources: experiences, stories, tools, artefacts, and methods for problem-solving" (p. 2).

A distinction needs to be made between naturally occurring communities of practice, where members spontaneously come together, and institutional communities of practice, which depend on a structural set-up (Busher et al., 2014). In naturally occurring communities of practice, members tend to work collaboratively and their relationships tend to be less hierarchical and planned. On the other hand, set-up communities of practice tend to work more cooperatively, since their organisation and activities depend on well-defined and organised tasks.

Intrinsic to the concept of community of practice are also the ideas of learning and identity. Members of a community of practice engage in common activities as a way of giving meaning to their experiences in the world, talk about their practices and shape their identities as members of a social group. Lave and Wenger's (1991) conceptualisation has had profound implications for the way educators see learning, and much research has been carried out in various contexts based on the concept of communities of practice and learning communities (Barton & Tusting, 2005; Hughes et al., 2007; Kimble et al., 2008).

Central to this study is the discussion about whether schools and classrooms can be seen as communities of practice (Kapucu, 2012; Haneda, 2006). Barab and Duffy (2000), however, argue that, to constitute a community of practice, groups in an educational context have to display certain characteristics, such as common cultural and historical heritage, interdependent system and reproduction cycle, as explained in the following table (Table 2.2).

Table 2.2: Characteristics of educational communities of practice

Common Cultural and Historical Heritage	Communities go beyond the simple coming together for a particular moment in response to a specific need. Successful communities have a common cultural and historical heritage that partially captures the socially negotiated meanings. This includes shared goals, meanings and practices. However, unlike the social negotiation of practice fields that primarily occur on the fly, in communities of practice new members inherit much of these goals, meanings and practices from previous community members' experiences in which they were hypothesised, tested and socially agreed on.
Interdependent System	Individuals are a part of something larger as they work within the context and become interconnected to the community, which is also a part of something larger (the society through which it has meaning or value). This helps provide a sense of shared purpose, as well as an identity, for the individual and the larger community.
Reproduction Cycle	It is important that communities have the ability to reproduce as new members engage in mature practice with near peers and exemplars of mature practice. Over time, these newcomers come to embody the communal practice (and rituals) and may even replace the 'old timers'.

Source: Barab and Duffy (2000, p. 37).

Barab and Duffy (2000, pp. 48-49) argue that schools tend to constitute "practice fields" since although "students work together as part of activity groups", they are often "alienated from full experiences" of external broader communities, since the activities students engage on are seen as "preparation for some later sets of activities, not as a

meaningful activities in its own right”. In order to design “practice fields” that could move into communities of practice, the authors list a series of principles (pp. 31-33): learners should actively engage with content, assume ownership over their learning, engage in reflection on their work, solve dilemmas and conflicts, work collaboratively, and learn in the context of a larger community. Moreover, teachers should coach and model thinking skills and scaffold learning.

Such principles resonate with the key principles of cooperative learning proposed by Johnson and Johnson (2014). However, as in the debate around practice fields and communities of practice, there is also some disagreement about how to transform classrooms in cooperative learning environments. Johnson and Johnson (2014) propose the adoption of five core principles to make CL effective. Other researchers, such as Slavin (2011), argue for a different minimum number of such principles; however, there are similarities between their views and they tend to agree that the principles below play an important role in creating successful cooperative learning groups.

1. Positive interdependence or group goal: it occurs when learners effectively work together towards a mutual aim and each student is aware that they can attain their aims if their teammates attain theirs (Johnson et al., 2010). The team goal provides learners with the motivation to engage and work with each other effectively. Requiring learners to work together is not enough since students must be given a reason to take one another’s attainment seriously (Slavin et al., 2003), leading to the team’s success. However, *positive goal interdependence* is not enough to ensure that positive interdependence occurs among students. According to Johnson and Johnson (2014), other types of positive interdependence should be added. An example is *positive reward interdependence*, when each student in the group can receive bonus points if all members of the team score above a certain percentage or above the criteria. *Resource interdependence* can also be implemented, and this is when each member of the group has different information or expertise so members of the group need to help each other understand the whole task or have to share materials and resources. Another type is *role interdependence*, which happens when students who have different and complementary roles, such as checker, writer, timer and leader, assist group members to be aware of each other’s contributions to the team’s work and help regulate the interaction among group members. Finally, *identity interdependence* can be created when students decide on a team name or symbol that is connected with the team. It can be said that structuring more types of positive

interdependence among group members in the classroom could produce better results (Johnson & Johnson, 2014).

2. *Individual accountability*: the group's success relies on all group participants' individual learning (Johnson & Johnson, 2014; Slavin, 2011). Learners are individually assessed without any assistance so they are aware of their responsibility to understand the given material and to respond correctly to the task to contribute positively to the team's performance. Individual accountability could be easily structured and measured within a small team (Kagan & Kagan, 2009) since the work tends to be more collective than individual when there is a reduced number of group members avoiding 'free-riding'. Additionally, it could be established by giving random individual oral examinations (Johnson & Johnson, 2014).

3. *Promotive interaction*: it occurs when individuals "encourage and facilitate each other's efforts to accomplish the group's goals" (Johnson & Johnson, 2014, p. 71). Gillies and Khan (2008) argue that increasing the quality of team interaction leads to increasing students' learning, particularly in teams where students work cooperatively. When all students in a class work on a team task at the same time, the teacher's role will be that of a facilitator of interactions rather than that of a supplier of knowledge (Kagan & Kagan, 2009).

4. *Social skills*: these are skills that help learners communicate successfully with each other, which are required for creating a cooperative environment and productive teamwork (Johnson & Johnson, 2014). If students do not possess such skills, they cannot work cooperatively since, for instance, they are not able to listen to each other or reach an agreement (Johnson et al., 2010). Social skills, such as trust and respect for each other, solving conflicts in a useful way, and acknowledging others' opinions and ideas, should be taught to learners to enhance their contribution (Johnson et al., 2010; Gillies & Boyle, 2010). Therefore, each student in the group must have an equal opportunity to participate actively in completing the task and a chance to learn from teamwork and interaction.

5. *Group processing*: it refers to the reflection on how helpful or unhelpful the actions of each member were in achieving the group's goal and which actions should be continued or changed (Johnson & Johnson, 2008b). The aim of team processing is to assist students to participate effectively and productively to attain the team's goals, leading to higher attainment (Johnson & Johnson, 2014).

The five principles above are the basis upon which this study analyses the form and the extent to which cooperative learning is used in the context investigated. Teachers who would like to use cooperative learning effectively should be able to understand these principles well in order to be able to implement them effectively. However, neither the literature on the implementation of these five principles nor Johnson and Johnson's model (Johnson et al., 2008) of cooperative learning account for how teachers determine the degree or to what extent each principle should be used in each lesson (Siegel, 2005). Neither does this model clarify how a teacher can plan for a cooperative learning lesson or explain which factors should be considered in that plan, or the total amount of lesson time that should be devoted to cooperative activities. Therefore, investigating teachers' perceptions and their decision-making about cooperative learning can help better implement this teaching approach in natural settings.

2.5 The benefits of implementing cooperative learning

A number of researchers indicate that learners can socially and academically benefit from working in small cooperative groups (Farzaneh & Nejadansari, 2014; Idowu, 2013; Johnson et al., 2010). One possible reason for such positive findings is the adoption of Johnson and Johnson's five principles of using cooperative learning discussed above. Some of the benefits that have been suggested will be discussed in this section and, although they are presented in this paper in distinct segments, they are, in fact, all interconnected and in a "reciprocal relationship" (Johnson et al., 2007, p. 21). Such reciprocity is largely created by *interaction*, which is the common factor behind such benefits. Interaction is also the aspect that perhaps most differentiates cooperative and collaborative learning from other more teacher-centred approaches to teaching and learning. Interaction and engagement with content in a social environment are seen as key factors in the creation of learning communities. The implementation of cooperative learning principles may lead to some noticeable academic and social benefits, as discussed below.

2.5.1 Academic benefits

Promotive interaction and understanding of content

According to VCSMR and Rao (2013), a main feature distinguishing cooperative learning approaches from other learning approaches is the opportunity for *interaction between learners*. Interaction is considered to be an instructional strategy, which depends on more

participation and discussion between learners in the classroom and allows them to learn from each other (Idowu, 2013). Interaction among learners in performing tasks is very likely to help promote better achievement as students could learn from each other when they discuss and engage in dialogue about the content (Gillies & Khan, 2008). Such improvement in terms of achievement, promoted by interaction, is the result of better *understanding of content* and this can be connected to learners' ability to cognitively engage with ideas and concepts and to be able to critically consider them. Therefore, studies on how cooperative learning can improve understanding of the subjects studied should also consider how promotive interaction and positive interdependence encourage the development of learners' cognitive skills and team effort to attain joint goals. According to Johnson and Johnson (2008a, p. 20), the characteristics of promotive interaction are,

Providing mutual help and assistance, exchanging needed resources, giving accurate mutual feedback, challenging each other's conclusions, advocating effort to achieve, engaging in mutual influence, engaging in trusting and trustworthy behavior, being motivated for mutual benefit, having a moderate level of arousal, engaging in more accurate perspective taking, exploring different points of view.

The concept of promotive interaction is in line with Vygotsky's (1978) concept of social construction of knowledge through learners' interaction that leads to engagement and mutual development. Promotive interaction among learners can be key to implementing a cooperative learning approach in the class (Slavin et al., 2003). Tsay and Brady (2010) investigated the relations between cooperative learning and academic performance among 24 undergraduate students on a communicative research course in an American university. The authors argue that students who actively contributed to group exercises by "helping to accomplish the group goals, coming to class prepared, providing constructive feedback and cooperating with the team" (p. 85) performed better in the groups and also had higher individual test scores and more positive course evaluation. Although higher scores do not simplistically lead to the notion of better understanding of the content, they are still an indication that students have engaged with it. The results seem to indicate that the impact of cooperative learning on learners depended on the quality of team interaction. Students' experiences of high-quality interaction process were connected with intrinsic motivation, self-esteem and constructive attitudes, and were positively associated with achievement of good test scores.

Interaction among learners in tasks is very likely to help promote better achievement, as students could learn from each other when they discuss and engage in

dialogue about the content (Gillies & Khan, 2008). Through interaction learners can learn how to examine issues, explain differences, share information and construct new understandings (Webb & Mastergeorge, 2003). Cooperative learning is also likely to be more effective than lecture-style to help learners master conceptual material as well as develop collaborative skills (Johnson & Johnson, 2009). In addition, Zakaria et al. (2013) investigated the effect of cooperative learning on secondary school students' mathematics achievement in Pekanbaru, Indonesia. The sample of this study consisted of 61 Form Three students who were taught mathematics by using cooperative learning and traditional instruction. Their findings confirm Johnson and Johnson's (2008a) concept of promotive interaction and indicate that the learners who were taught by using cooperative learning mastered more content than the students taught by traditional instruction.

From the studies mentioned above, it can be said that understanding of the content and knowledge could emerge in cooperative learning environments from interaction among learners for many reasons. Although these studies were conducted in different educational contexts, the results are quite similar. They seem to indicate that learners could use certain strategies to teach and explain material to each other; summarise and discuss content; be enriched by working in a heterogeneous group; help each other to seek information and fill gaps in their understanding; and provide feedback to other members of the group (Johnson & Johnson, 2008a). However, interaction in a cooperative learning environment does not necessarily lead to improved academic achievement. Other factors also play important roles in creating effective interaction and it is the teachers' job to implement desired cooperative learning instruction and strategies to make it happen.

Higher-order thinking and problem-solving skills

Understanding of content can be connected to learners' ability to cognitively engage with ideas and concepts and to be able to critically consider them. Therefore, studies on how cooperative learning can improve understanding of the subjects studied could also consider how such interaction promotes the development of learners' critical thinking skills. Facione (1990) defines higher-order thinking as,

the purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based (1990, p. 2).

This definition does not focus on rote memory, and the term ‘explanation’ requires that critical thinkers’ understanding should be verbalised. In a typical class using lecturing, there could be little time and very few opportunities for reflection and debate on learners’ misconceptions or errors (Sadeghi, 2012). However, in cooperative learning environments learners continuously clarify and discuss their understanding of concepts (Sadeghi, 2012). Critical thinking could be stimulated in learners through a high level of debating between team members (Gillies, 2008). This has been observed not only in the face-to-face studies discussed here, but also in some online learning environments. According to Havard, Du and Xu (2008) and Riley and Anderson (2006), when learners discuss concepts with their team members, solve problems, suggest possible solutions and find mistakes, they potentially improve their higher-order thinking skills. Problem solving is considered to be the application of skills and knowledge to attain specific aims (Slavin, 2014). In the traditional class structure, learners could be discouraged from participating actively, and this kind of classroom environment is not likely to lead to problem solving (Brown, 2008). However, a cooperative learning environment is very likely to be beneficial for the development of problem-solving skills (Williams, 2012). Activities in the social setting of teamwork could assist learners to concentrate on incorporating different pieces of information that are important to solve a problem. Different levels of thinking could be employed by team members who seek to solve a problem from different points of view. In addition, problems help to focus the team’s discussions on the content learned in class (Goran & Braude, 2007). Some researchers have emphasised that cooperative learning techniques can enhance learners’ higher-order thinking skills and problem-solving abilities, which are important for learners to be academically successful (Gillies, 2008; Siegel, 2005).

Increased academic achievement

Although literature in the field of cooperative and collaborative learning, as well as the empirical studies previously discussed, seems to confirm the theory that promotive interaction leads to better understanding of content and a higher level of critical thinking, it must be acknowledged that there are considerable difficulties in trying to measure learners’ understanding of content. In most educational contexts, the assessment of how much students have learnt is still carried out through tests and high levels of understanding are usually associated with higher test scores. Some researchers point out that the level of achievement of learners who are involved in cooperative learning approaches can be higher than that of learners working in more traditional ways (Tran, 2014; Zakaria et al., 2013).

Putnam (1998) bases her studies on Jonson and Johnson's five principles of cooperative learning and social interdependence theory, and supports the idea that productivity and attainment are very likely to be greater when students learn cooperatively than when they work individually or compete. This can happen across different curriculum areas and at various grades (Slavin, 2011). A number of studies have been carried out to investigate the efficacy of cooperative learning in comparison with whole-class instruction. Aydin (2011) investigated the effects of cooperative learning on achievement among 43 students in primary school education in a science and technology application course in Turkey for one academic year. He shows that higher scores were achieved in four out of five experimental classes and attributes this to the cooperative method used and the creation of a positive classroom environment. In earlier research also in Turkey, Doymus (2007) conducted a study among 108 chemistry students in two classes and found that using the cooperative jigsaw method increased the chemistry achievement test scores of the experimental group. The author argues that this was due to the intellectually stimulating discussion students had in class.

Studies in the Arab world focus mostly on performance and achievement and have provided some similar findings. In Kuwait, Sarkhouh (2007) carried out a study based on the CL strategy to examine the effect of teaching mathematics on the achievement of intermediate-stage students. The study sample consisted of 101 students (46 male and 55 female) randomly divided into two groups: the experimental group was taught by using the cooperative learning strategy and consisted of 48 students (20 male and 28 female), whilst the control group was taught by using the lecture-style and consisted of 53 students (26 male and 27 female). The findings indicate that there are statistically significant differences in the achievement of sixth-grade students in mathematics, which can be attributed to the instructional strategy that favours the students who studied by using cooperative learning. Another example of an experimental study focusing on achievement comes from Syria, where Shaiban (2009) investigated the effect of implementing the cooperative learning strategy on academic achievement when teaching some social science concepts. The experimental study was conducted with fourth-grade basic education learners in Lattakia City. The sample consisted of 96 pupils, male and female, half from rural areas and half from urban ones. The results also indicated differences between the average achievements of the experimental and control groups in favour of the experimental group – the one using CL. However, there were no differences between the average achievements of the experimental group in the rural and urban areas.

In these studies, learners' achievement measures, usually scores on tests or quizzes, were used to compare the performance of learners assigned to either cooperative learning or traditional instruction. The results of these studies indicate that learners in the experimental groups (using cooperative learning) scored significantly higher than learners in the control groups (using whole-class teaching) after the instruction.

In contrast with the studies mentioned above, other studies claim that there is no significant difference in terms of students' achievement between classes implementing a cooperative learning approach and those using traditional methods. Huddy (2012) conducted a meta-analysis to investigate the effectiveness of cooperative learning on learners' outcome. This study examined 19 published studies that investigated (through experiments) the impact of a cooperative learning approach on students' achievement in comparison with traditional methods. The findings indicate that there is no difference in learners' achievement between students who were taught by using cooperative learning and those working in more traditional classroom environments. This is in line with the study by Almufadda (2006) conducted in Saudi Arabia (see Section 1.2, p. 13), where no evidence was found in favour of a cooperative learning approach over more traditional teaching methods in terms of performance.

One of the possible reasons behind the conflicting results between the studies mentioned above is the way cooperative learning strategies were implemented in them. Johnson and Johnson (2014) emphasise that, without the right conditions to promote positive interdependence or group goal, individual accountability, and direct teaching of collaborative skills, the cooperative learning approach is very likely to backfire and be detrimental to learners' achievement. Slavin (2011) emphasises the importance of two key elements: group rewards or group goals and individual accountability (i.e. teams can be rewarded based on the individual learning of all team members), which should be incorporated in any successful form of cooperative learning to enhance student achievement.

Retention

Retention is one of the factors that may lead to higher academic achievement. According to McCauley and McClelland (2004), in traditional lecture-style teaching, when note taking is the students' main task and information has been memorised, knowledge is only stored in the short-term memory. Berrett (2012, p. 2) supports McCauley and McClelland's idea by indicating that such a form of delivery "set[s] up a dynamic in which students passively

receive information that they quickly forget after the test”. In contrast, in cooperative learning environments learners retain information longer than learners who are taught by other teaching methods (Bukunola & Idowu, 2012; Johnson & Johnson, 2009; Tran, 2014). According to Sousa (2006), studies showing the average percentage of learning material retention after 24 hours can be affected by the teaching method that is used. Students’ average knowledge retention 24 hours after the lecture method has been used is only 5%. Such a low percentage can be explained by the fact that the lecture method of delivery provides little learner active participation or mental rehearsal (Sousa, 2006). Other teaching methods, however, can potentially lead to more knowledge retention, with teaching practices that require learners to discuss in a group resulting in 50% material retention, and techniques that require learners to practise the content by carrying out activities leading to 75% retention. Sousa (2006) also argues that the average knowledge retention percentage when employing methods that require learners to teach others is 90%. According to Moore (2008), other studies indicate that the strategy of integrating *telling* and *showing* could lead to 65% material retention after three days. Further empirical studies (Bukunola & Idowu, 2012; Tran, 2014) also seem to confirm the claims that in cooperative learning environments learners can retain more information and knowledge when they provide more elaboration and explanation to each other.

On the other hand, some researchers have found no difference between the retention knowledge of learners using a traditional learning method and that of learners using a cooperative learning method. For example, Hoxworth (1999) carried out a study to compare retention scores of learners instructed using traditional learning methods to retention scores of learners instructed using a cooperative learning approach. The participants were 23 fifth-grade students over eight weeks of instruction at an elementary school, a small suburban school in East Tennessee. The results indicate that there was no considerable difference between the retention scores of learners who were taught social studies by using a cooperative learning approach and the retention scores of learners who were taught social studies by using traditional learning methods. The researcher points out that “lack of formal training”, “time constraints” and “no prior whole-class teaching experience” should constitute no “conclusive evidence to the abandonment of cooperative learning as an alternative to traditional instruction” (p. 29).

Time on-task and classroom behaviour

The time constraints mentioned by Hoxworth (1999) and classroom time management have also been pointed out by other researchers. A cooperative learning approach can increase time on-task by engaging learners' attention and decrease off-task behaviour (Blatchford et al., 2007; Johnson & Johnson, 2009). In addition, learners can be more on-task in group behaviours (taking turns, sharing materials, group discussion of content) (Blatchford et al., 2007).

This is also confirmed by a study carried out by Pate-Clevenger et al. (2008) to investigate the effect of using cooperative learning on decreasing student off-task behaviour in an elementary school and two different high schools in Chicago, Illinois. Data collected from surveys and a behaviour checklist shows that "off-task behavior was curbed by using cooperative learning" (p. iii). Such findings confirm Johnson and Johnson's (2008a, p. 2) claim that cooperative experiences can encourage learners to engage in pro-social behaviours, which are defined as "actions that benefit other people by helping, supporting, encouraging their goal accomplishment or well-being" resulting in a reduction in learners' problems and disruptive behaviours (Gwyn-Paquette & Tochon, 2002).

Increased learner motivation

Motivation in educational contexts can "apply to any process that activates and maintains learning behaviour" (Palmer, 2005, p. 1857). In other words, students can find academic activities meaningful and attempt to academically benefit from them. Therefore, without motivation to learn, learners could not effectively engage in class learning and are likely to encounter difficulties in performing well in their academic work.

Literature on motivation has traditionally tried to establish the differences between internal and external motivation (Long, 2005). External motivation for performing well in classroom tasks has often been related to the idea of rewards (Bijleveld et al., 2012), but there is disagreement between researchers regarding the influence of extrinsic rewards, such as tokens or prizes, on students' motivation to learn. Literature from as early as 1990s shows that, when rewards are used to bribe learners to work together in a cooperative learning situation, their motivation and level of performance could actually decrease (Kohn, 1991). Kohn (1991) argues that humans tend to be simply happy to do certain activities until they start being paid for doing them and suddenly they can find themselves unwilling to do the same activities unless they are paid for them. He indicates a number of studies that

show decreasing motivation when rewards are used. In one of them, learners who solved a puzzle competitively were less likely to continue working on the problem than the learners who did not compete for rewards when performing the activity (Deci et al., 1981, cited in Kohn, 1991). Another concern among educators regarding using rewards to support effective cooperative learning is whether such supports will translate to the real world (Skinner et al., 2004). Effective cooperative teams should have goals that are essential to group members, meaningful content and positive relationships between team members.

Yet, recently a number of researchers have argued that team rewards can be useful to promote cooperative team learning (Law, 2008; Shimazoe & Aldrich, 2010). Slavin et al. (2003) indicate that educators should make an effort to make learners intrinsically motivated; however, there is no problem with using rewards, such as certificates and other kinds of recognition, to encourage learners to do the task successfully in their teams. They argue that learners in a cooperative learning situation should realise the importance of what their team members attain and that, without rewards for group work some, learners might not consider the importance of group achievement.

According to Pan and Wu (2013), the cooperative learning approach is more likely to enhance learners' motivation to learn than traditional lecture instruction due to positive social interdependence that could lead them to assist each other and exert more effort to attain team success. Pan and Wu (2013) investigated 78 EFL freshmen taking English reading courses, with 44 participants in the experimental group and 34 in the comparison group. This experiment was implemented in the course with two hours of instruction per week, over a full semester. The experimental group received cooperative learning instruction, whereas the comparison group received traditional lecture instruction. The experimental group showed increased motivation to learn due to the cooperative learning environment in comparison to the whole-class instruction group. The English Learning Motivation Scale paired *t* test results show that the experimental group had "positive promotion on each motivation factor after one semester of intervention, and promotions were statistically significant in liking, dedication, self-efficacy, and total score" (p. 20). According to Shaaban (2006), a cooperative learning environment can help students realise the value and importance of the content they are studying, and see themselves as competent contributors to team aims, resulting in increased motivation to learn. Wang (2012) supports Shaaban's view by indicating that learners can be motivated by interacting with each other when they feel positively supported by their team peers and feel they are important to their

teammates. As a result, shy or uninterested learners can be motivated by the support they receive from members of their group.

Yet, working independently can also lead to positive learning strategies (Duren & Cherrington, 2010), and some studies claim that there is no significant difference in terms of students' motivation between classes implementing a cooperative learning approach or using traditional methods. Tan et al. (2007) carried out a study on learners' academic achievement and their motivation to learn. It investigated 241 seventh-grade learners in geography classes in Singapore, focusing on the impact of the group investigation method in comparison with the effects of the traditional whole-class method of instruction. The researchers concluded that cooperative learning had no effect on learners' motivation and attributed this to the short duration of the experiment. Learners' history of exposure to teaching and learning was exclusively with the whole-class method and six weeks might be insufficient for a cooperative learning approach to influence their motivation to learn. Moreover, the learners were exposed to group investigation only in the geography class while all other areas remained fundamentally unchanged from the traditional classroom environment. The fact that in this study learners were allowed to form groups to work according to their "interests and friendships" (p. 146) may have affected their findings since the principle of heterogeneity in group formation (Johnson & Johnson, 2014) was not observed.

Autonomy and responsibility

Learner autonomy is defined as learners' "ability to take responsibility for their own learning and to apply active, personally relevant strategies" (Littlewood, 1997, p. 81). Benson (2007) indicates that autonomous learners should take responsibility to determine the purpose, the material and the strategy of their learning. They should monitor the progress of their learning and evaluate the outcomes. The idea of autonomous learners - who have the right and power to learn for themselves - is considered an essential principle by a number of proponents of learner autonomy (Smith, 2008).

Learner autonomy can work at the individual level but also emerge within the social context (Smith, 2008). According to Dam et al. (1990, p. 102), learner autonomy is "a capacity and willingness to act independently and in cooperation with others, as a social, responsible person". Kohonen (1992) clarifies the idea of emerging autonomy within social contexts by indicating that autonomy "includes the notion of interdependence, that is, being responsible for one's conduct in the social context: being able to cooperate with others and solve conflicts in constructive ways" (p. 48).

Pedagogical approaches should be taken into account because they can play an essential role to provide students with the opportunities to control their own learning process (Smith, 2003). Pedagogical approaches not only help learners to improve their learning inside the classroom but also encourage learners to be autonomous learners outside the classroom and promoting lifelong learning. A number of researchers point out that a cooperative learning approach tends to increase autonomy and encourage learners to become responsible students for their own learning (Johnson & Johnson, 2009; Koh et al., 2007; Shimazoe & Aldrich, 2010). This is confirmed by a study that was conducted by Hanze and Berger (2007) to compare the effects of a cooperative learning approach and traditional direct instruction on 137 students in 12th-grade physics classes who participated in the quasi-experimental study in Germany. The findings indicate that students who were taught by using cooperative learning felt more autonomous, more competent and more socially related to their group mates. Enhancing learners' autonomy is likely due to the second main principle of cooperative learning that makes this approach effective, which is individual accountability (Johnson & Johnson, 2014). Each student in the group must be aware of their responsibility to understand the given material and respond correctly to the task to contribute positively to the team performance and make sure that all team members learn and understand the given material very well (Slavin, 2011). Learners should make an effort to maximise their own learning and their group mates' learning to be successful and achieve the group's goals (Bolukbas et al., 2011). This creates a situation where learners have a degree of independence and authority within their teams (Slavin, 1996a). Because learners take ownership of their learning, the characteristics of self-directed learning can begin to emerge (Queen, 2009). The promotion of learners' responsibility by using cooperative learning was confirmed by Er and Atac's (2014) study. Their findings indicate that, for the majority of learners, individual responsibility could be enhanced due to having a cooperative learning environment.

Another factor that can have an impact on enhancing learners' responsibility, active learning and the characteristics of self-directed learning that lead to encourage autonomous learning is the role the teacher takes in the classroom (Kagan, 2013). In cooperative learning environments, educators should shift their role from being a teacher who is in charge of learners' learning to being a teacher who assists the learners to be in charge of their learning. Therefore, educators need to delegate authority and responsibility for group management and learning to the learners (Slavin & Cooper, 1999). As Johnson and Johnson (1999b) point out, "the more individuals work cooperatively, the more they see themselves

as worthwhile and as having value and the more autonomous and independent they tend to be” (p.73). However, teachers and learners in different cultural and educational contexts may have different notions of autonomy and responsibility, and it is important to investigate the effect of cooperative learning in more traditional teaching cultures.

2.5.2 Social benefits

Interpersonal relationships

According to proponents of cooperative learning, using such an approach should be maximised in the class in order to enhance positive relationships between learners (Johnson et al., 2010; Tran & Lewis, 2012), whereas individualistic and competitive learning should be minimised (Johnson & Johnson, 2008b). The whole-class method may isolate learners and create competition, which in turn may lead learners to focus on extrinsic motivation to achieve higher academic attainment than their peers. Conversely, a cooperative learning approach may enhance intrinsic motivation and interest (Shaaban, 2006). Cooperative learning is likely to lead to “greater interpersonal liking, group cohesion, valuing of heterogeneity, and task-oriented and personal support” (Johnson & Johnson, 2008a, p. 2). Roseth et al. (2008) carried out a meta-analysis on 148 middle schools and over 17,000 students to investigate the effect of cooperative relationships over individualistic and competitive experiences on interpersonal attraction. The findings indicate that cooperative learning approaches promote greater interpersonal relationships between learners than competitive conditions (0.48 standard deviation) and also than individualistic conditions (0.42 standard deviation). The data shows that cooperative learning environments may promote an improvement in caring for every learner, even when learners do not like each other. The experience of cooperation has been found to enhance greater liking rather than individualistic and competitive situations. Jonson et al. (2010, p. 8) argue that such positive outcomes can only be observed when the five basic principles of CL are “effectively structured” and implemented.

In addition, positive relationships that can be promoted by cooperative learning result in satisfaction, increased motivation, commitment to team goals, personal responsibility for attainment, group cohesiveness and persistence to complete the tasks (Johnson & Johnson, 2014; Slavin, 2011). Farzaneh and Nejadansari (2014) in a study conducted in Iran investigated students’ attitudes towards CL in reading instructions, and the findings of their survey suggest that cooperative learning helped students to socialise more and also led to enhanced class participation. Moreover, many teachers point out that they get

to know their learners much better in cooperative learning environments. When academic staff observe learners working in small teams and then intervene, this is likely to produce more informal and personal interactions between the teachers and the learners than in a lecture-style environment (Johnson et al., 2010).

Self-esteem

Johnson and Johnson (1995, p. 119) define self-esteem as “a judgment about one’s self-worth, value, and competence based on a process of conceptualising and gathering information about oneself and one’s experiences.” There seems to be a close relation between positive self-concept and positive self-esteem, so learners who believe they can do a number of things well are very likely to feel better about themselves (Taylor et al., 2007). Learners’ self-esteem can be affected by how well learners attain progress in the class, how they interact with each other and how their peers feel about them (Slavin, 1995). It can be noted that self-esteem relates to both academic achievement and social interaction, and when learners see themselves as successful learners, their self-esteem is likely to increase (Peterson & Miller, 2004). In the above-mentioned studies, cooperative learning can lead to an increase in learners’ attainment and better relationships between learners. Johnson and Johnson (2009) indicate that there are more than 80 studies comparing the relative effects of cooperative, competitive and individualistic experiences on self-esteem. The average self-esteem rate of learners who worked cooperatively was three-fifths of a standard deviation above the average self-esteem of learners working competitively, and over two-fifths of a standard deviation above the average scored by learners who worked individually. This has been confirmed by a number of researchers who point out that a cooperative learning environment can increase learners’ self-esteem and social competencies (Bertucci et al., 2010; Tran & Lewis, 2012).

Anxiety reduction and learning enjoyment

Anxiety can be defined as an unhappy emotional condition characterised by feeling of stress, worry and fear (Hockenbury & Hockenbury, 2012). It is considered one of the main barriers to productivity and the creation of positive relationships among learners. It can lead students to egocentric preoccupation with themselves and disruption of their cognitive thinking (Johnson et al., 2010). In traditional classroom environments, there are some situations that may lead to an increase in learners’ anxiety. For example, individual learners may be asked to provide answers to the whole group and they might feel embarrassed if their answer is incorrect (Brandy, 2013). In addition, interpersonal competition is very likely to cause high anxiety among learners (Johnson et al., 2010). Some other classroom situations, such as

exams and difficult decisions learners have to make, may increase anxiety (Johnson, 2008). On the other hand, a cooperative learning environment seems to help to reduce learners' anxiety (Johnson et al., 2010; Zakaria et al., 2013). According to Crandall (1999), when learners work together, more time is available for them to think, share their views with their classmates, obtain feedback from other learners and correct their own mistakes. Such interaction is likely to reduce the level of learners' anxiety and even increase their willingness to answer the educators' questions in front of their peers. Collaborative and cooperative tasks, however, may also create anxiety, especially when there is a "misalignment of performance expectations within teams" (Favor, 2012, p. 157).

The impact of cooperative learning on anxiety reduction in the classroom was demonstrated by a study (Zakaria et al., 2013) carried out to examine the impact of cooperative learning on learners' mathematics attainment and students' perception concerning cooperative learning in secondary school students in Pekanbaru, Indonesia. Quantitative results showed that students preferred cooperative learning because it enabled them to "exchange ideas with friends without fear (26.1%)", "make friends and ask questions (23.2%)", quickly understand "when a friend gave an explanation (10.7%)", and not be "afraid if an error occurred (10.3%)" (p. 99).

Reduction of anxiety may be directly associated with an increase in learning enjoyment. Some studies reveal that cooperative learning could positively affect learners' attitudes towards learning. The findings of a study conducted by Cavanagh (2011) show that learners agreed that cooperative learning activities helped them maintain enjoyment and interest in the sessions. The main reasons were a diversity of activities that "broke up the time" and "kept [learners] alert and thinking" by "involving" (p. 28) them in the classroom tasks. A study conducted by Scherman and Toit (2008) in the University of Pretoria in South Africa with nine MA learners in a Research Design Tools module also seems to indicate that cooperative learning has a positive impact on students' learning enjoyment. Data indicated that the main reason for this was that learners actively felt involved in the learning process in the classroom as "group work and activities expect more of the learner than just sitting and listening to a lecturer" (Scherman & Toit, 2008, p. 436).

Some studies show that cooperative learning could positively increase learners' attitudes towards the subject matter being studied. The findings of the study conducted by Aydin (2011) showed that students in the cooperative group developed more positive attitudes towards the science technology course than was the case with the learners who

were taught by using a traditional method. The researcher attributes this to “the presence of intra-group assistance and support, active participation, and higher levels of success that come with the cooperative learning method” (p. 643).

2.6 Drawbacks, challenges and barriers

Although both theoretical and empirical studies suggest that there are a number of social and academic benefits from working in small cooperative groups in classes, there are also drawbacks and challenges for educators who wish to implement this approach. Many researchers who have investigated the use of cooperative learning concentrate on positive outcomes, with few looking at the challenges and dilemmas teachers might face in using this approach. Randall (1999, p. 29) states that “so popular has cooperative learning become that its benefits may blind us to its drawbacks”. The following sub-sections discuss some of these drawbacks.

2.6.1 Free-Riding

This term can be defined in a situation where,

some team members do all or most of the work and learning while others go along for the ride. The free rider effect is most likely to occur when the group has a single task to accomplish such as being asked to submit a single report, complete a single worksheet, or produce a single project (Slavin, 1995, p. 19).

This is considered one of the disadvantages that face educators when they implement a cooperative learning approach (Davies, 2009; Kapp, 2009). This problem could cause resentment among learners who do the most work and feel that they are “fools for carrying the slackers” (McCorkle et al., 1999, p. 108). However, the teacher can play an essential role to avoid this problem. According to Slavin (1995), if cooperative learning approaches are not adequately implemented, they can allow the ‘free-riding’ effect. Researchers suggest that the inclusion of positive interdependence and individual accountability - two of the principles of cooperative learning - can help to avoid free-riding (Johnson & Johnson, 2008b). One of the strategies that can be used by the teacher to structure these principles is assigning specific roles to students, such as facilitator, timekeeper and encourager, so that team members are individually responsible for their contribution and accountable to the team (Gillies, 2003a; Johnson & Johnson, 2014). Another strategy that can help teachers encourage equal participation is random choice (Lemme, 1998). One learner in each team can be randomly chosen to answer the educator’s

question. As the learners do not know which group member might be next, each learner will attempt to answer the question and confirm that his or her teammates will also do so.

2.6.2 Curriculum coverage

One of the challenges that teachers can face when they use a cooperative learning approach is curriculum coverage (Wichadee & Orawiwatnakul, 2012). Thanh's (2011) findings indicate that the curricula in some South Asian countries are designed in a quantitative format that gives equal importance to all topics and therefore teachers tend to focus on covering the syllabus more than on students' deep understanding of the content. However, in cooperative learning environments the focus lies more on deep understanding and critical thinking than on curriculum coverage. Khalifa (2011) claims that it can be difficult to cover considerable amounts of material when teachers do not use lecture-style. In contrast, some researchers indicate that cooperative learning can help to cover the material more than lecture-style. For example, Dinan and Frychowski (1995) point out that using a cooperative learning approach to teach Organic Chemistry helped teachers and students to cover more material from the curriculum than using lecture-style. This could depend on the kind of cooperative learning chosen and the ways educators manage and organise activities in the classroom. Content coverage could also depend on different subjects.

2.6.3 Consuming time before and during the lesson

There are two relevant issues related to time. Firstly, one of the drawbacks of using cooperative learning is that educators need considerable time to plan and prepare for the lesson (Gillies & Boyle, 2010). This could be due to the fact that teachers need to spend extra preparation time to make sure that their lesson and plan involve the principles of cooperative learning, such as positive interdependence and individual accountability, to create an effective environment. Poor preparation and plan mean that cooperative learning is useless (Mastropieri et al., 2007). As a result, some educators do not use cooperative learning because they do not have time to prepare adequately for it (Putnam, 1998).

Another issue that relates to time is that the nature of teaching cooperative learning groups requires considerable time allocation (Liang, 2002). For example, it takes time to set groups, determine roles and assign tasks (Liang, 2002). In addition, learners need to discuss and work on team tasks which requires considerable lesson time, and could fail to complete the work in the time allocated by the educator (Basamh, 2002). This may affect other material that teachers need to cover. Gillies and Boyle (2010) carried out a study to

investigate the perceptions of 10 middle-year teachers who implemented cooperative learning in a specific subject in the curriculum across two school terms in Brisbane, Australia. Data from the interviews, however, showed that educators had positive experiences with time management in cooperative learning activities and that their students managed their time more effectively and finished work in the time. The conflicts between researchers' points of view are due to a number of factors that play an important role, such as teachers' training to use this strategy, lesson planning and management (Gillies & Boyle, 2010).

2.6.4 Large class size

According to Almulla (2012, p. 5), the definition of class size is “the number of pupils in a given class with a teacher”. Large classes are considered one of the challenges that educators may face when they intend to use cooperative learning. In his study, Almulla (2012) investigated teachers' perceptions of the effects of class size on teaching in primary schools in Alhafouf, Saudi Arabia. The participants were 30 teachers who taught small classes (15-20 students) in two private schools and 37 teachers who taught large classes (30-40 students) in two state schools, and questionnaires and interviews were used to gather the data from the teachers. The findings showed that educators in large classes implemented lecture-style with their learners more frequently than educators teaching small classes. However, educators in small classes implemented pair work or group work with their learners more often than educators working with large classes. The main reason behind that, from the teachers' point of view, is that group work with large classes needs more lesson time. Almulla's findings confirm Thanh's (2011) by indicating that, if learners are divided into teams of four or five and there are 13 or 14 groups working simultaneously, educators will not have sufficient time to monitor each team to confirm that all the students are working effectively.

On the other hand, other studies argue that the implementation of cooperative learning with large classes leads to positive effects. For instance, Armstrong et al. (2007) carried out a study to investigate the effect of cooperative learning activities on learner attainment and attitudes in large classes (more than 250 university learners) in studying introductory biology classes in the spring of 2004 and spring of 2005. There were two biology classes, one was taught by using cooperative learning (treatment group), and the other class was taught by traditional lecture (control group). The results indicated that

“cooperative learning activities can improve student outcomes even in very large classes” (p. 167).

Herreid (1998) raised another issue with using cooperative learning in large classes, which is that classrooms where all the seats are fixed to the floor could be a barrier for teamwork. Similarly, Wichadee and Orawiwatnakul (2012) point out that seats arranged in tiers and closely spaced can be a problem for group working. This is likely to be an issue in the context of this investigation since seats are usually arranged in close rows in the classroom where participants have sessions.

2.6.5 Loss of classroom control and noise

The ability to control the classroom could be one of the challenges that teachers face when they implement cooperative learning (Thanh, 2011). The possible reason behind this is that it could be difficult for educators to manage every team simultaneously (Gilbert, 2007). Another possible reason is that, if cooperative learning is used in an inappropriate way, problems with classroom control and discipline can emerge (Johnson & Johnson, 1999a).

Conversely, some researchers point out that using cooperative learning can help control learners' behaviour and reduce classroom management problems (Gwyn-Paquette & Tochon, 2002). This is confirmed by Cangelosi (2000), who states that the implementation of cooperative learning activities can promote learner engagement in the lesson, develop intrinsic motivation and reduce disruptive behaviour. The author suggests that educators should use cooperative learning to gain more efficient class control.

Another matter that is related to classroom control is levels of noise generated when learners are engaging in cooperative learning activities. When all learners participate and interact with their group mates at the same time, this can create higher levels of noise compared to lecture-style, which requires quiet in order for students to listen to the teacher. This noise is likely to make some teachers and learners who prefer quiet work in a lecture environment feel uncomfortable (Thanh, 2011). However, it can be constructive and it is not proof of lack of control; on the contrary, it might be evidence of learners' engagement in cooperative learning activities (Zuheer, 2008).

2.6.6 Lack of experience with CL

This is considered one of the barriers to the use of cooperative learning approaches (Basamh, 2002; McWey et al., 2006). According to Murphy et al. (2005), when educators attempt to use cooperative learning but lack understanding and information about this

approach, learners tend to experience frustration and failure. In addition, poor implementation of a cooperative learning approach is likely to prevent positive academic and social outcomes (Johnson et al., 2010). Thanh (2011) carried out a study investigating the difficulties that compromised its implementation among 40 teachers and 40 students from 20 Vietnamese colleges. Participants answered a questionnaire about cooperative learning and then interviews were carried out with 10 teachers and 10 learners on their perceptions of this practice. The results showed that teachers did not understand the function of cooperative learning because they maintained that this approach mainly assisted learners to remember content rather than to acquire better understanding of the text they were studying. In addition, the researchers also commented that,

[t]he lack of guidance on how to establish small group learning was also a concern. They did not have many materials to consult and to guide them to solve group work problems. This might help to explain why the teachers were unable to help their students manage problems related to sharing their work, mutual teaching and reducing social loafing (p. 8).

Teachers with little or no experience of using cooperative learning could misunderstand this approach by simply dividing learners into groups to work with their teammates on an assigned task. This kind of structure may not lead to positive outcomes if educators are not familiar with the principles of cooperative learning. According to Johnson and Johnson (2014), cooperative learning should be used under specific conditions (positive interdependence or group goal, individual accountability, promotive interaction, social skills such as communication and conflict resolution skills, and evaluation of group processes). Understanding and creating these principles in the classroom could lead to the successful implementation of cooperative learning and help to address or at least reduce some of the other disadvantages and problems mentioned above (Cohen, 1994; Johnson et al., 2010; Slavin, 2011).

In a study conducted by Bessett et al. (1999) to examine the differences between low and high users of a cooperative learning approach among 115 seventh- and eighth-grade middle school teachers, questionnaire findings indicated that teachers who used cooperative learning frequently were better trained and experienced than low users of this approach. In addition, high users mentioned more elements of cooperative learning than low users. Some important CL principles, such as positive interdependence between learners and social skills, were not mentioned as essential by low users of CL. Therefore, experienced and

knowledgeable instructors can be considered one of the important factors contributing to the success of cooperative learning implementation (Alansari, 2006; Johnson et al., 2010).

Lack of experience in working cooperatively can also be a problem from the point of view of the learner. According to McWey et al. (2006), students might resist engaging with cooperative learning due to their lack of experience with a CL environment and the socialisation of individualism and competitiveness in previous classroom experiences. However, students may feel uncomfortable at the beginning but they tend to enjoy the experience in the end (Morgan et al., 2010). Some researchers indicate that there is a need to teach students how to work cooperatively and use communication skills (Blatchford et al., 2003; Gillies, 2008).

2.7 Cooperative Learning Teaching

Successful implementation of a cooperative learning approach could be defined as a situation when learners work cooperatively with each other in a small group and they share resources and ideas to achieve mutual goals. When every student in the team understands the learning process and skills, the best outcomes could happen (Murdoch & Wilson, 2004). As a result, it is important for teachers to be aware of the essential factors of cooperative learning in order to effectively implement it in their classes and create the right environment. If teachers do not understand the essential factors of cooperative learning well, other kinds of group work could emerge that do not promote cooperation. For example, 'pseudo group', where learners work as a group but they do not have concerns to do so; or 'traditional work group', where learners exchange information with each other but there is no motivation to share knowledge (Johnson & Johnson, 2014). As a result, learners would attain more if they in fact worked individually.

Siegel (2005) conducted a study to investigate teachers' implementation of cooperative learning. The participants were five middle school maths and science teachers, and interviews and observations were used to collect the data. The findings indicate that there are some factors such as lesson objectives, perceptions about student ability, task difficulty and curricular constraints that could affect teachers' decision to use cooperative learning or not in their lessons. However, cooperative learning could be suitable to use in any subject area (Murdoch & Wilson, 2004; Slavin, 2011). In addition, Kagan and Kagan (2009) argue that the cooperative learning structure is not aimed at a specific subject; it can be used and adapted in any curriculum area, although tasks could be developed for specific

subject use. It could be said that teachers' experiences in implementing cooperative learning in any content in any subject area could play an essential role in affecting their decision to use cooperative learning or not.

2.7.1 The teacher's role

The roles of educator and learners in cooperative learning classes should be clearly understood and teachers should change their role from lecturer, in traditional methods, to facilitator, in a cooperative learning approach (Kagan, 2013). In other words, in order to implement CL teachers should change their philosophy from *transmission orientation*, where the teacher has knowledge and their main job is to transmit that knowledge to their learners, to *transaction orientation*, where the teacher assumes that their students should seek knowledge through interaction with them and with their classmates (Kagan, 2013). Pan and Wu (2013) support Kagan's idea by indicating that the role of teachers in cooperative learning should be mediation, which involves facilitating, modelling and coaching. Therefore, teachers should delegate the responsibility and the authority for the group's learning and management to the learners (Slavin & Cooper, 1999), and thereby each learner has a chance to contribute to achieving the mutual goals of the group to create their own knowledge. However, the transition from teacher-centred to learner-centred could be a problem in a context where learners do not know how to take charge of their learning (Maloch, 2002). Therefore, it is important for teachers to provide learners with clear directions and guidelines that help them in the process of learning. This changes the role of teachers from 'sage on the stage' to 'guide on the side' (Kagan, 2013, p. 44).

Learners in cooperative learning are active and interact with each other but this does not mean teachers have an opportunity to have a break or do nothing. According to Johnson and Johnson (2014), teachers could help students to understand academic tasks and manage the classroom to enhance the effectiveness of the group's functioning. In addition, CL could provide teachers with more time to reflect on what is occurring in the class when they observe their students work independently with the material, and teachers do not have this opportunity when they are 'on stage' (Shimazoe & Aldrich, 2010).

2.7.2 Teaching practices and techniques

Cooperative learning requires the teacher to carefully plan the learning objectives and tasks and then meticulously implement what has been planned (Mastropieri et al., 2007) in order to structure and facilitate positive interdependence, promotive interaction, individual

accountability, group processing and the development of social skills (Johnson & Johnson, 2014). A number of steps have to be considered in terms of planning the course and the lessons, monitoring students' performance in class and deciding on which techniques are the most appropriate to achieve better results.

Preparation

According to Johnson and Johnson (2014), before the CL lesson begins, teachers should make some series of *preinstructional decisions*. If the plan is poorly designed, this method might be useless. An important part of the planning is to determine two kinds of lesson objectives (academic and social skills objectives). Academic objectives specify the strategies and the concepts that should be learned from group task or task analysis, whereas social skills objectives specify interpersonal and small group work that should be used during the lesson (Johnson et al., 2008). However, teachers who are familiar with traditional methods such as lecture-style usually focus on only academic objectives rather than social objectives, and therefore there is a need to shift their focus to both kinds of objectives when they plan to use a cooperative learning approach. In doing so, social skills as one of the five important factors of cooperative learning could be enhanced and likely lead to successful cooperative learning.

Another significant aspect of preparation is to determine the optimal group size. Previous studies have not determined a specific number of students as the optimum group size, with some authors suggesting pair work as the most effective (Lou et al., 2001), groups from two to four learners (Johnson et al., 2010), and groups of three to five students (Oakley et al., 2004). However, perhaps even more significant than the group size is how students are assigned to the groups. According to Johnson and Johnson (2014), randomly assigning learners to a group is the most effective way. There may be times when teachers assign students to cooperative learning groups that are homogeneous in ability to achieve instructional objectives or to teach specific skills (Johnson & Johnson, 2014). On the other hand, there may be times when assigning different abilities and perspectives in a group is essential in a cooperative learning environment and could have a more positive effect on promotive interaction among group members (Ballantine & Larres, 2007; Gillies, 2003b). Students' different abilities may also be taken into consideration when assigning complementary roles (Johnson & Johnson, 2014) to be performed in the group, which could help learners to be individually responsible for their contribution and accountable to the team (Gillies, 2003a).

A further aspect concerning preparation is the planning of instructional materials. The kinds of tasks learners are asked to complete determine what materials are needed for the lesson, and teachers can decide how the materials should be arranged and distributed between students in groups to increase their participations and attainment (Johnson & Johnson, 2014). Moreover, materials used in a CL lesson should promote interdependence (Gillies & Khan, 2008; Sears & Pai, 2012; Shimazoe & Aldrich, 2010) and critical thinking (Gillies & Boyle, 2010). However, designing tasks that help and encourage learners to work cooperatively is not easy (Blatchford et al., 2003) and teachers need to be trained and gain experience in this area.

Implementation

As a first step to implementing CL, teachers need to make sure group work can take place in the physical space of the classroom since this could have an impact on facilitating or impeding interaction and communication between students in the group and between students and their teacher (Quattrin, 2007). The design and the arrangement of furniture and space in a cooperative learning classroom should help students to face each other and face the teacher at the same time (Johnson et al., 2010). Having then appropriately placed the students in the classroom, the next aspect to consider is the instructions given to them. It is essential to clearly explain the academic task to students (Asyali et al., 2005; Johnson et al., 2008) for them to be able to understand what the task is, what should be done to complete it and how to do it (Asyali et al., 2005; Johnson & Johnson, 2014). In addition, students should know the academic and social objectives or the desired results of the lesson (Johnson et al., 2008) since learners are more likely to meet the objectives of the lesson when they are provided with clear information and explanations that are essential to successfully and correctly perform academic assignment (Gilbert, 2007).

Once students have been given a task, the teacher should monitor each learning team, intervene when it is necessary to improve task work and teamwork and provide closure to the lesson (Johnson et al., 2008). Many researchers have confirmed the importance of teachers' monitoring role to engage students in cooperative activities (Asyali et al., 2005; Ballantine & Larres, 2007; Yi & LuXi, 2012). Peterson and Miller (2004) found that, when cooperative learning tasks are carefully designed and monitored, the goals can be achieved and students can more actively engage in their learning experiences. Based on their observation of students' interaction and group work, teachers can intervene to improve both learners' academic learning and/or collaborative skills (Johnson & Johnson,

2014). Moreover, while monitoring the group work, the instructor can suggest some effective strategies for them to work together or enhance skilful and effective behaviours (Johnson & Johnson, 2014).

Another issue that should be taken into account is whether teachers should give students rewards for their work. As previously discussed (pp. 52-54), rewards are connected to the idea of extrinsic motivation. Johnson and Johnson (2009) and Slavin (2011) indicate that the way of structuring rewards can impact on establishing positive interdependence among group members, which is recommended for effective cooperative learning. According to Slavin and Cooper (1999), there are three kinds of reward structures, which are “individual rewards for individual achievement, group rewards for group achievement, or group rewards for individual achievement” (p. 651). *Individual rewards* are usually used in traditional classes, when each member of the group is rewarded for his or her individual achievement. Another type is *group reward for collective achievement*, when group members complete the task and the team’s product receives a positive evaluation even if not all of the team members equally contributed to completing the task. However, researchers suggest that *group rewards for individual achievement* may be more effective in establishing interdependence between students and avoid a “free-riding” (Johnson & Johnson, 2009). Moreover, rewards can play an essential role in promoting social relations between students in cooperative classes. According to Slavin and Cooper (1999), learners who were in groups that were structured with team rewards based on individual achievement reported more friendships among group members than did students in control groups without rewards.

At the end of the lesson, teachers should assess the strengths and weaknesses of the teamwork and the academic outcomes (Yi & LuXi, 2012). However, the assessment is not only to determine the quantity of student achievement but also the quality of the learning (Johnson & Johnson, 2014). According to Ross and Rolheiser (2003), previous research on student assessment in cooperative learning indicates that team grade alone is not enough and it might be better to assess students individually and also assess the product of the group. Therefore, teachers can combine each student’s score with bonus points when all members of the group reach a criterion. This is confirmed by Zuheer (2008), who argues that the marks should be divided into two parts: one for how well the students do individually and the other for the team’s achievement. As previously discussed (pp. 43-44), individual assessment, extra bonus points when all members of the group reach a criterion,

and the design of the task could help to establish individual accountability and positive interdependence among group members (Johnson & Johnson, 2014). Both formative assessment and summative assessment could be implemented to assess students in cooperative learning (Yi & LuXi, 2012). These two types of assessment may include: criterion-references assessments, curriculum-based assessments, portfolios (collections of exemplars of work), group or individual presentations and tests or quizzes (Gillies, 2007).

Although these different kinds of assessment are usually based on team task, the concern is about how they contribute to learners' overall attainment. According to Gillies and Boyle (2010), a number of researchers found that formative assessment could improve students' achievement overall, in different age groups and programmes, and this improvement may be related to the frequent use of feedback that assists learners to know what they need to do to successfully complete a task. Feedback can encourage learners to believe that they could improve, when it concentrates on what needs to be done and students are willing to make the required effort (Black et al., 2004). On the other hand, Wiliam et al. (2004) conducted a study to investigate the effect of formative assessment and standardised tests on the achievement of secondary school students. They found that formative assessments could take time for teachers to use and develop, and there was notable evidence that indicated the benefit of using standardised tests on students' achievements. As a result, both formative and summative assessment tasks can help students to improve their performances. Moreover, students can be involved in assessing each other's level of learning, which can provide current remediation to make sure that the learning of team members is maximised (Johnson & Johnson, 2014). In addition, involving students in the process of assessment can learn them to monitor what they should do and learn, which promotes their achievement (Gillies & Boyle, 2010).

In terms of the assessment of the group's functioning, according to Johnson et al. (2010), at the end of the lesson, students need to describe the actions of the group members that were helpful and unhelpful in completing the team's work. In addition, students should decide which behaviours should continue or change and set goals to improve the quality of their work in future practice. However, group processing can happen on two levels, which are each learning team or as a whole class. According to Johnson and Johnson (2014), each learner, each team and the class as a whole should provide and receive feedback related to the impact of task work and teamwork, and this feedback should be specific and not evaluated, and then the students should reflect on the feedback they receive. In addition,

teachers can use the findings of the observations from monitoring students' work stage to provide information regarding group processing (Asyali et al., 2005).

Cooperative learning techniques

There are a number of cooperative learning techniques that researchers have developed in order to implement them effectively in different subjects (Table 2.3). Although there are differences between them in terms of application and the structure of the tasks, they all emphasise the idea that learners work together to learn and are responsible for one another's learning as well as their own learning (Slavin, 1995). The most popular and extensively researched are described below.

Table 2.3: Kinds of cooperative learning methods

Researcher	Date	Methods
Aronson & Associates	Late 1970s	Jigsaw
Stevens, Slavin, & Associates	Late 1980s	Cooperative Integrated Reading and Composition (CIRC)
Slavin & Associates	Late 1970s	Student Teams-Achievement Divisions (STAD)
DeVries & Edwards	Early 1970s	Teams-Games-Tournaments (TGT)
Sharan & Sharan	Mid 1970s	Group Investigation
Johnson & Johnson	Mid 1960s	Learning Together (LT)
Johnson & Johnson	Mid 1970s	Constructive Controversy

Source: Adopted from Johnson et al. (2000, p. 3).

The Jigsaw Approach. Slavin (1995) describes this approach by indicating that learners can be assigned to cooperative groups working on material that has been divided into a number of parts. Each part is assigned to one learner in the group. Learners from different groups who have been allocated the same part should meet in expert teams to negotiate the same material. When they finish their discussion, they should return to their original group and take turns teaching their team members. This emphasises interdependence between group members.

Cooperative Integrated Reading and Composition Approach (CIRC). This approach can apply cooperative learning to effectively teach reading and writing (Sharan, 1999). Sharan (1999) explains this approach by stating that it contains three main elements: "basal-

related activities, direct instruction in reading comprehension, and integrated language arts/writing” (p. 25). Learners are grouped heterogeneously in terms of their reading level into pairs or triads. The group members can carry out diverse activities independently of the educator. For example, group members can read to each other, they can understand the major ideas of their reading and they can make presentations in front of the class.

Student Teams-Achievement Divisions approach (STAD). The major aim of this approach is to create motivation for learners to help and encourage each other to attain desired academic outcomes and social skills when they work in groups (Slavin, 1995). Slavin (1995) describes this approach by indicating that students can be grouped in heterogeneous teams in terms of ability, ethnicity and sex. The material can be initially presented by the educator and then the learners work in groups to ensure that they understand the material or the content of the lesson. Finally, learners individually do a test and the group that obtains the highest score from the average of the group members’ results is the winner. This approach emphasises rewards and therefore the winning group can receive a certificate or other reward (Slavin, 1995).

Teams-Games-Tournaments approach (TGT). According to Slavin (1995), this approach is the same as the previous method (Student Teams-Achievement Divisions approach), the only difference is that “instead of the quizzes and the individual improvement score system, TGT uses academic tournaments, in which students compete as representative of their teams with members of other teams who are like them in past academic performance” (p. 84).

Group Investigation Approach. The technique of this approach is based on some components that refer to investigation where multiple problems and challenges are posed by the educator. Then, learners try to answer the problems by seeking information and ideas in cooperation with their group mates and formulate their answers (Sharan, 1999). Another component of this approach is interaction, where social context can be provided for learning through mutual support and discussion among learners in teams. With this approach, learners can choose a topic of interest to examine. After that, they plan their investigation and then carry out it. Finally, they present their findings in front of the class and the educator and other learners evaluate their project (Sharan, 1999).

Learning Together (LT). This method emphasises the five key factors previously discussed (pp. 43-44) (positive interdependence or group goal, individual accountability, promotive interaction, social skills such as communication and conflict resolution skills, and

evaluation of group processes). The Learning Together model is not related to a particular curriculum or subject area and therefore it can be suitable for any subject (Murphy et al., 2005). Johnson et al. (1991) recommend some steps to successfully use this approach (Table 2.4) and stress that learners should work on assignment sheets in heterogeneous groups of two to four students, in terms of ability.

Table 2.4: Learning Together steps

Learning Together
<ol style="list-style-type: none"> 1. The instructional objectives should be determined before the lesson. 2. The team members should be grouped in circles to facilitate communication. 3. The instructional materials should be planned to enhance interdependence. For example, just one sheet of materials should be given to group members to facilitate sharing, or each learner has different books or resources that relate to just one section of the lecture. 4. The roles of group members should be assigned to confirm interdependence, such as a summariser who restates the team's main answers or conclusions; an encourager who makes sure that all team mates contribute; a checker who makes sure that all team mates can explain how an answer or conclusion is arrived at; and a recorder who can write down the team's decisions and revise the team's report. 5. The task should be explained, the procedure that should be followed by learners must be clear and it is important that the criteria for success are clarified to the students. 6. The positive interdependence should be established. For instance, the team can produce a single product or receive team rewards that are based on the individual attainment of every team member. 7. The individual accountability should be structured. For example, individual tests should be given or one member of each team can be randomly selected to present group work. 8. Intergroup cooperation should be established. For example, a group that finishes early can be encouraged to assist other groups to complete the task. 9. The desired behaviours should be specified. For instance, some behaviours can be appropriate when a team is first formed, such as 'stay with your group', 'use quiet voices', 'use each other's names'. Other behaviours can be more advanced, such as 'have each member explain how to arrive at the answer', 'check to make sure everyone in the group understands the material and agrees with the answers', 'encourage everyone to participate', 'criticize ideas, not people' (Johnson & Johnson, 1991, p.66-67). 10. Learners' behaviours must be continually monitored in case they have a problem with using collaborative skills or with the academic task itself. 11. Providing help with tasks. When teams are monitored during their work, educators can explain instructions and review some strategies to complete the task. 12. Intervention in important situations to teach collaborative skills can be provided. 13. Learning and processing interaction should be evaluated, which can be by giving closure to the lecture with a summary by learners and educators, evaluating learners' work (providing tests or learners' presentation) and observing the team process.

Source: Based on Johnson et al. (1991).

Constructive Controversy. Johnson and Johnson (1979) argue that the construct of intellectual conflict (controversy) that can lead to an improvement in academic learning is considered to be one of the most essential learning tools. Johnson and Johnson (1995) indicate some steps to structure this approach:

- a) A topic should be chosen by the educator that can be easily broken into two sides, for and against.
- b) Learners are assigned in teams of four; two learners are given the ‘for’ position and the other two students are the ‘against’ side.
- c) Each pair researches and learns information that is related to their position to prepare for a convincing debate.
- d) The position of each pair should be presented and the educator should confirm the essence of reaching a general agreement.
- e) Each pair is allocated a time in which to discuss and provide evidence for their position.
- f) The pairs exchange their positions and conduct the opposite debate.
- g) Finally, each team writes a team report when they have determined a decision by agreement.

However, Johnson and Johnson (1995) state that particular topics and curriculum areas can be more suitable for this approach than others, and it should be implemented by educators who have implemented other types of cooperative learning and with learners who are familiar with a cooperative learning approach.

2.7.3 Teacher training programmes (pre-service and in-service)

According to Fullan (2007), the main obstacles to attaining educational change are the lack or no awareness of the need for educational change and the lack of teachers and educators’ important knowledge and skills in order to bring about educational change. Therefore, when teachers change their current teaching methods to use cooperative learning, they should be willing to initiate change and aware of the need for this change. Furthermore, teachers should have the knowledge and skills needed to use cooperative learning.

There are significant theoretical and practical differences between cooperative learning and traditional teaching methods (lecture-style) such as the one used in the Saudi Arabian educational context. For example, teachers should change their role from lecturer, as in traditional methods, to facilitator, as in a cooperative learning approach (Kagan,

2013). In addition, according to Krol et al. (2004), there is a need for teachers to be able to use the desired cooperative learning instructional behaviours, such as the structuring of positive interdependence and individual accountability, the promotion of social skills and the evaluation of group processes that are necessary to create a context in which students can cooperate. New teaching behaviours, understanding their new roles and how they can learn using cooperative learning probably require teachers and students who are new to CL to undergo a training programme (Hennessey & Dionigi, 2013). Cooperative learning is a complex pedagogy where students are required to work together in groups (Jolliffe, 2007). However, learning new teaching methods and behaviours is a challenging task that demands time, repeated practice, encouragement, feedback and commitment (Jolliffe, 2015; Sharan, 2010).

Finkbeiner (2004) claims that a pre-service training programme is important because it gives the trainee-teachers the opportunity to practise and experience cooperative learning methods before they apply the model in school settings. They can discuss effective and less effective techniques before using this new approach. The training programme could have an influence on pre-service students in choosing teaching methods when their turn to teach students in schools arrives. Taspinar (2007) and Algarfi (2010) argue that involving cooperative learning structures in pre-service teacher training is considered an ideal means by which to qualify and encourage prospective teachers to implement this practice appropriately.

According to Herreid (1998), the majority of current teachers have been trained by a traditional teaching method (lecture-style) and some of these teachers, especially teachers who are good lecturers, believe that there is no need to use other methods of teaching. McWey et al. (2006, p. 253) support Herreid's idea by indicating that "some instructors whose personal and professional training has largely focused on traditional teaching practices may require additional training to implement CL effectively". Therefore, in-service training, or Continuing Professional Development (CPD), is an important way to assist teachers to improve their understanding of new teaching methods and experiences to enhance students' achievement (Algarfi, 2010; Guskey, 2003). By continuing professional development we understand the formal and informal learning opportunities provided to staff in order to promote their "professional competence, including knowledge, beliefs, motivation and self-regulatory skills" (Baumert & Kunter, 2006; Kunter et al., 2007, cited in Richter et al., 2011, p. 116). CPD can be divided into formal and informal modes of

training. The first is defined as occurring in structured learning environments, usually organised by institutions and requiring trainees' regular attendance at talks, workshops and activities (Richter et al., 2011). On the other hand, informal CPD learning opportunities are those in which there is no specific structure or schedule and in which staff members collaboratively share their knowledge by having informal conversations, carrying out peer observation, and creating networks and study groups (Richter et al., 2011). Joyce and Showers (2002) have conducted extensive work and a review of studies involving CPD and coaching sessions and argue that to be effective CPD needs to include feedback, mentoring and follow-up activities. They also present a model that includes several stages of development: explaining the new approach or idea; demonstrating how it can be done; practising the new approach; doing evaluation; providing teachers with feedback on their implementation of the new approach; and working with teachers on how to improve their practices (coaching).

In a study conducted by Cohen and Hill (2000), learners' attainment was higher when taught by educators who had participated in some form of CPD compared to the attainment of students who were taught by educators who had not participated in CPD. Slavin (2014) highlights the dangers of implementing cooperative learning without understanding the requirements of this teaching method. Having desired goals when using cooperative learning does not always guarantee success because putting this method into practice is considered more complex than at first thought (Sharan, 2010). Slavin (2014) has recommended training teachers on the proper foundations of using cooperative learning, such as the importance of goals, accountability and roles, and the differences between group work and cooperative learning. As a result, teachers who are new to cooperative learning could need CPD to adopt this approach in their classrooms. Blatchford et al. (2003) emphasise the importance for teachers to be taught how to work with groups, and what kind of tasks and lessons need to be well organised.

Roy (1998) argues that training programmes can be effective and very likely to lead to changes in class behaviour when involving the following components: teachers should understand the theory that undergirds the new practice; teachers should see the new teaching models put into practice by experts; supervised practice should be provided when teachers apply new techniques and they should receive experts' feedback; and class coaching should be provided. Creating the opportunities for teachers to experience and practice a number of cooperative learning tasks and lessons in varied content areas should

be thus the long term goal of CPD (Krol et al., 2008). Adding to this list, Davison et al. (2008) emphasise the importance of leadership and support from the school principal or head teacher to establish and maintain motivation while implementing CPD and cooperative learning in schools.

However, Abrami et al. (2004) argue that only providing training does not guarantee that changes will happen since some teachers may implement the new ideas enthusiastically, others may never try them and others may return to their traditional teaching over a period of time. Sharan (2010, p. 303) argues that, when there is an effort to provide CL formal training programmes, CL is “often abandoned” and the cooperative classroom practices “significantly reduced” over a period of time. DelliCarpini (2009, p. 49) also calls attention to the “gap between teachers’ theoretical knowledge and their classroom practices” and states that education programmes should support teachers to implement CL effectively. Finkbeiner (2004) highlights that the trainers in a cooperative learning programme should consider all variables that can enhance the transfer of CL into class practice and help teachers to be aware of the opportunities for application and adaption, to ensure that the teachers practise it in different contexts and to give them support for transfer of CL in their classes. Webb et al. (2006, pp. 63-64) carried out qualitative research involving two teachers and 77 students in six seventh-grade general mathematics classes at an urban middle school in the Los Angeles metropolitan area, and their findings indicate that there were no considerable differences in academic attainment by using cooperative learning methods. Educators did not change sufficiently from traditional standards and students did not have the ability to work cooperatively; instead, they carried out most of the work individually and, when they did provide help to their peers, it consisted of “low-level help” with little attention to their colleagues’ “levels of understanding”. The researchers recommended that a cooperative learning training programme should be well organised and involve changes in three aspects: “activities directly targeted at student behaviour, ways of targeting teachers’ instructional practices, and the instructional tasks used” (p. 109).

Although change can lead to development and improvement, it can also bring about resistance (Fullan, 2007). Stability is considered a strong preference for individuals, while change can lead to a move to an unfamiliar area. Some teachers tend to keep using their own methods of teaching as a ‘comfort zone’ and it can be difficult to convince them to change or move to another zone (Shannon, 2006). According to Knowles and Linn (2004,

p. 4), “the definition of resistance is that it is a reaction against change. It becomes evident in the presence of some pressure for change”. Resistance can be an attitude where affective, cognitive and behavioural as components of resistance can influence individuals, specifically when people are aware that they would be the heart of an attempt to make a change. When individuals think and worry about the aspects of the change in their situation, it is considered a natural reaction and a normal response to change because change usually includes going from known to unknown (Bovey & Hede, 2001).

Fear of change and resistance to it can occur for a number of reasons. Firstly, according to Yılmaz and Kılıçoğlu (2013), this can be seen when individuals receive insufficient information regarding the nature of change and they do not acknowledge the need for change, and thus they may feel anxious and fearful about the implications of the change. They add that the level of resistance can increase when individuals feel a loss of control in their work. Extra workload, which is usually connected with the change and decreases the degree of self-interest, can be another cause of resistance to change (Trader-Leigh, 2002). In addition, old ideas and the years of practice are considered other causes of resistance. According to Elliott and Tudge (2007), teachers who have participated in a particular process for many years are expected to be more resistant to change. Additionally, previous experiences of change can affect individuals’ attitudes towards change (Hargreaves & Shirley, 2009). Therefore, unhappy previous experiences of change may lead to resistance to change. Finally, the process of change is usually stressful and uncomfortable due to the efforts and time that may be required in order for the new effect to take place (Yılmaz & Kılıçoğlu, 2013).

From above mentioned, it can be said that it is necessary to manage resistance to reform and change, and the factors and causes that can lead to resistance should be analysed (Fullan, 2007). According to Yılmaz and Kılıçoğlu (2013) and Hughes (2010), some methods that can help to overcome resistance to change are good education and communication with the participants; the participants should be involved in the process of change and decisions about it; facilitation and support of the participants; and negotiation and agreement about the strategies that can be implemented. These issues should be considered when investigating to what extent Saudi teachers who received training on using cooperative learning can change their traditional teaching method (lecture-style).

2.7.4 The correlation between educators' beliefs and their practice in the classroom

Abrami et al. (2004) found that professional development (training) should be used to promote teachers' belief that they can succeed in implementing innovation in their own context. Therefore, beliefs can play an essential role to determine what teachers do in their classes. Richards (1998, p. 66) argues that educators' beliefs are related to "the information, attitudes, values, expectations, theories, and assumptions about teaching and learning that teachers build up over time and bring with them to the classroom". In other words, education, knowledge, culture and experience have an impact on teachers' beliefs and could have considerable influence on their teaching practices (Roehrig & Kruse, 2005). This was observed by Mansour (2008) in a study involving 10 teachers using interviews and observations conducted to investigate the role of experience in relation to teachers' beliefs and practices. The findings indicate that various sources of experience, such as the teacher education programme (pre-services), training programmes (in-services), the work-place and culture, could shape teachers' beliefs.

Richardson (2003) argues that knowledge can shape perceptions, which, in turn, are likely to influence practice. However, in reality, perceptions without experiences do not exist. According to Dretske (2006), awareness (knowledge, information and experience) is required to create perceptions and therefore perceptions without awareness would be impossible. Typically, a person's perception should give us not only the information required but also all types of extra information on this person's experience, knowledge and background. In order to gain perception, some kinds of experiences are required. According to Gupta (2006), individuals' experiences can make a rational contribution to their knowledge, and their experiences and knowledge are very likely to form their judgements and perceptions.

In order to change the educational process, a change in teaching methods, beliefs and materials is required and this should happen through a personal development process in social contexts (Fullan, 2007). Brody (1998) indicates that educators' beliefs could influence teachers' practice in the class, the choice of instructional methods, the locus of control and sense of authority, teachers' conceptions of their role, the nature of knowing and knowledge, and teachers' conceptions in decision-making in teaching. Brody adds that the systems of beliefs are considered 'deeply-etched patterns' that reflect orientations and directions to guide teaching tasks and create a set of personal constructions to guide an educator in interacting with new views and practices. Hence, different beliefs are likely to

lead to different teaching practices (De Hei et al., 2015). As a result, teachers' beliefs, knowledge and experiences should be considered in the process of pedagogical change in the class (Mansour, 2008). According to Flavell et al. (2002), new actions and attitudes could show that some different kind of new knowledge construction and thinking is taking place.

In order to change to a cooperative perspective, a shift in sensibility, fundamental assumptions and beliefs about learning and authority is required (Algarfi, 2010; Brody & Nagel, 2004). Educators' use of cooperative learning could partly rely on the particular beliefs and knowledge about education they hold, the match between the styles that they are using or learning, and their beliefs about students' learning (Brody, 1998). DelliCarpini (2009) found that teaching practice could be influenced by teachers' beliefs and their prior experiences and that, if teachers are not exposed to effective models of cooperative learning in their education programmes, it might be unrealistic to expect them to engage in cooperative learning in their classrooms. Another study was conducted by De Hei et al. (2015) to investigate the beliefs and practices of 115 lecturers in higher education related to collaborative learning. It is important to mention that, although the researches refer to 'collaborative' learning, they also argue that the effectiveness of such practices depend on Johnson and Johnson's five principles of cooperative learning. In spite of the terminology issue, the findings of the survey and follow-up interviews indicated that there is a relation between lecturers' beliefs (educator's role and acquisition of knowledge) and the use of collaborative learning in the classroom. Lecturers had positive attitudes towards collaborative learning and frequently used it if they believed that knowledge could be learned and discovered and that these activities enhanced students' motivation to learn.

The main aim of the present study is to investigate to what extent training (CPD) relates to teachers' information, knowledge and experiences that might shape their beliefs and could have an impact on their perceptions and practice regarding CL. In addition, it aims to examine to what extent this training could help teachers to improve their actual implementation of CL in their classes. In order to change from traditional teaching methods (lecture-style) to cooperative learning, there should be a change in teachers' beliefs in respect of their role in the class, and the objectives and the benefits that they and their students wish to gain or enhance from implementing alternative teaching methods.

2.8 Group Interaction

The role and behaviours of students in cooperative classrooms are considerably different from their behaviours and roles in traditional classes or teacher-centred classes. According to Alhaidari (2006), Saudi classrooms rely heavily on lecture-style transmission and memorisation and therefore the students' behaviours are to actively listen and passively receive what their teachers tell them. However, in Saudi cooperative classes as a new teaching method, the focus of learning should shift to the students (student-centred) (Dyson et al., 2004). The students' behaviours in cooperative learning would be determined in the light of the five principles of cooperative learning (positive interdependence, individual accountability, promotive interaction, social skills and group processing).

In practice, each learner should be responsible for his/her own learning (*individual accountability*) and for the success of other teammates' learning (Slavin, 2011). Students should make sure that other group members complete the task and attain the academic outcomes. Hence, *positive interdependence* exists when students help each other work and learn cooperatively (Johnson & Johnson, 2014; Zuheer, 2008), leading to mutual interaction among group members and higher levels of reasoning used by each member than when students are working individually or competitively (Johnson & Johnson, 2008b). In their efforts to accomplish the group's goals (Johnson & Johnson, 2014), learners are required to interrelate with each other in groups (*promotive interaction*) when carrying out tasks (Johnson & Johnson, 2009). Gillies and Boyle (2010) argue that there is no doubt that social interaction can play an essential role in how students learn.

However, students could not effectively work with each other when socially unskilled learners are arranged in one team (Johnson et al., 2008), and successful communication is required for creating a cooperative environment and productive teamwork (Johnson et al., 2008). Students need to use a range of interpersonal and *social skills*, such as communication skills, leadership, conflict management and decision-making to work effectively with each other, which can lead to coordinate efforts to achieve mutual goals (Johnson & Johnson, 2009). Gillies and Boyle (2010) suggest that interpersonal skills include actively listening to each other, stating ideas freely, accepting responsibility for one's behaviour and providing constructive criticism. Small-group skills include taking turns, sharing tasks, making decisions democratically, trying to understand the other person's perspective and clarifying differences (Gillies & Boyle, 2010). Social and communicative skills can also facilitate the process of group reflection on how helpful or unhelpful the actions of each member were in

achieving the group's goal and then make decisions about what actions should be continued or changed (*group processing*) (Johnson & Johnson, 2008b).

If these basic principles of cooperative learning are present in group work, students can potentially achieve better results and demonstrate superior learning skills (Johnson & Johnson, 2008b), leading to more successful implementation of CL (Johnson et al., 2010). Therefore, by observing the presence or absence of the principles of cooperative learning when students work in groups, some students' behaviours can help to assess the effectiveness of CL implementation in the classroom (Table 2.5).

Table 2.5: Students' group work behaviours in relation to the principles of CL

CL principles	Students' behaviours
Positive interdependence	Team members should work cooperatively towards the same goals, care for and help each other, share resources such as information resources, one pen and one piece of paper for the answers, and decide on a team name or symbol.
Promotive interaction	The team members discuss the task material with each other, ask each other some questions, provide and receive explanation, and encourage and praise each other.
Individual accountability	Each team member should do his or her share of the teamwork, check each other's understanding, and play a specific role such as leader, checker, timer and writer. Some team members should not do all or most of the group work while one or two other students do nothing.
Social skills	The team members should have communication skills such as actively listening, turn taking and constructive criticism, solve conflict when they do not agree with each other, have decision-making skills such as considering all students' perspectives and use them to make a decision, and have leadership skills such as giving clear direction and managing the meeting.
Group processing	The team members discuss the helpful and unhelpful nature of each member's actions in group work and make decisions about which actions should be continued or changed.

2.9 Summary

The majority of the studies discussed in this chapter show that CL presents many social and academic benefits to learners in contrast to direct teaching. Such positive results have been achieved in different cultural and teaching contexts and they largely seem to confirm the principles of social-constructivist theory, which shows that knowledge cannot be only transmitted and/or acquired individually, but should be jointly built by learners in

communities. However, the review of the literature conducted here seems to indicate that, although Johnson and Johnson's model is taken into consideration as the conceptual basis for CL, there is little research on how frequently and effectively their five principles are actually implemented. In spite of the generally positive views of CL, there are considerable challenges to implementing it in the classrooms, especially because different procedures and practices are often used inconsistently, leaving teachers and students with many doubts about its effectiveness.

Despite the quite extensive literature on CL, there is still a gap in the field since very little research has been found on how teachers who have received in-service teacher training to use CL are currently implementing it, their views on its advantages and disadvantages, and their opinions on the contextual factors that can affect its implementation (RQ1). This study is thus an investigation of the extent to which the CPD training in CL led to the implementation of these principles in the research context (RQ2), and whether this has led to academic and social benefits to students, as the literature suggests happens in various other contexts. This study also addresses the research gap on students' views on CL regarding the same aspects (RQ3). This investigation was conducted in a context where direct instruction and individual cognitive learning have been traditionally the main forms of teaching and learning. Therefore, the findings can be potentially relevant for educators, teacher trainers and educational policy-makers working in similar educational cultures where cooperative learning is still seen as a new teaching approach.

Chapter 3: Research Methodology

3.1 Introduction

This section is devoted to the methodology adopted in this study. It discusses the research framework (paradigms), research approach, methodology and procedures used to gather the data and analyse it. It discusses the theoretical basis for conducting this study and describes the stages of designing the research instruments, piloting and the procedures for collecting and analysing data. It also discusses issues of reliability, validity and trustworthiness. It concludes with a discussion of the ethical aspects involved in doing research.

3.2 Research questions

The setting of this investigation is a state all-male high school located in a city in Saudi Arabia. The aim of the present study is to investigate the possible relationships between in-service teacher training and trainee teachers' perceptions and attitudes towards the use of CL in a traditional lecture-style context. It also aims to examine to what extent participant-teachers understand the CL principles and how they can be effectively structured and implemented in their classrooms. The present study also investigates their students' views of whether creating a CL classroom environment can help them improve their learning academically and socially. Data was collected in order to answer the following research questions:

1. What are the perceptions of cooperative learning by participant-teachers who received training on it?
2. Which teaching practices do participant-teachers currently employ when facilitating cooperative learning work in the classroom?
3. What are participant-students' perceptions of the benefits and challenges of cooperative learning?

3.3 Theoretical considerations and research design

All research is underpinned by a paradigm chosen by the researcher. This paradigm is related to the researcher's beliefs, assumptions and values and determines the research design and the understanding of the findings of any study. A paradigm is "a set of assumptions about the world, and about what constitute proper techniques and topics for

inquiring into that world” (Punch, 2009, p. 16). This system of beliefs is based on ontological and epistemological assumptions (Cohen et al., 2011). It is important for researchers to understand these philosophical foundations since they are connected to the nature of reality (ontology) and how knowledge can be acquired and used (epistemology) in order to be able to draw a more comprehensive picture of the study being conducted. These principles provide researchers with directions for all phases of a study including methodological considerations, research methods, instrumentation and data collection (Cohen et al., 2011). The first of these research paradigms is informed by a line of thought called Positivism and the second by a mode of thinking usually named Interpretivism. They are both influenced by different ways of seeing reality and understanding the nature of knowledge discussed below.

The *ontological questions* that philosophers ask are related to the nature of existence and the nature of physical objects and therefore ontology is concerned with the kind of events that exist in the social world (Thomas, 2009). Ontological assumptions are related to the social phenomena being investigated in the social world. They seek to determine whether reality is external to individuals and has an objective nature or, conversely, it is the product of individual cognition and constructed by individuals’ perceptions and social interactions (Cohen et al., 2011). These two ways of thinking about social reality create two strands: *objectivism*, which assumes that the social phenomena are “typified as external to subjective meaning, constraining of the individual and enduring over time” (Kettley, 2010, p. 64); and *subjectivism*, which assumes that the social phenomena are “constituted through personal meaning, interaction and subjective interpretations. Ideas construct reality (...) through human motivation and actions” (p. 68). The present study is mainly based on the ontological assumption that the social phenomena can be studied through participants’ interactions and perceptions. As a result, knowing the perceptions, experiences, interactions, and practices of teachers and students regarding the implementation of CL is fundamental to achieving the aims of the present study.

Epistemology is the study of the knowledge of the social phenomena and how this knowledge can be obtained (Thomas 2009). The two ways of thinking that have emerged from the ontology (objectivism and subjectivism) create two epistemological assumptions that are related to the paths of researching and enquiring into the nature of reality and the nature of things (Cohen et al., 2011). Objectivism assumes that explanations and knowledge of social phenomena can be obtained from observable facts and deductive

reasoning. Researchers who adopt a deductive approach formulate a hypothesis that can be deduced from the theory, this hypothesis is empirically tested and then accepted or rejected (Bryman, 2016). On the other hand, subjectivism assumes that explanations and knowledge of social phenomena can be obtained from individuals' experiences, understanding and inductive reasoning (Thomas, 2009). Adopting an inductive approach in research means that the theory is the outcome and the product of the investigation (Bryman 2016). In other words, knowledge of the social phenomena being investigated can be sought from individuals' explanations and perceptions. In this study, I adopt a subjectivist position, which understands that teachers' and students' perceptions and explanations of their attitudes towards CL can provide the most relevant information to answer the research questions posed.

Two main *research paradigms* have emerged from the ontological and epistemological positions discussed above, Positivism and Interpretivism. *Positivism* is a philosophical system that considers that "all genuine knowledge is based on sense experience and can only be advanced by means of observation and experiments" (Cohen et al., 2011, p. 7). Therefore, social phenomena can be studied and researched in ways similar to natural phenomena by generating theories and applying laws that can be empirically tested and objectively and 'scientifically' described (Cohen et al., 2011). This means that variables must be isolated, measurable parameters established, and the relations between such variables considered. In addition, a hypothesis about these relations should be developed and tested, and, finally, conclusions should be drawn on the basis of such findings (Thomas, 2009). During this process, the researcher is expected to be as neutral and objective as possible (Bryman, 2016).

Quantitative research is usually associated with the Positivist paradigm (Bryman, 2016) since it usually aims to objectively investigate a hypothesis. Quantitative research is considered an "inquiry into a social or human problem, based on testing a theory composed of variables, measured with numbers and analysed with statistical procedures" (Creswell, 1994, p. 2), which aims to determine whether the researcher's generalisations of the theory apply to the study being conducted. Data in quantitative studies is typically collected from numerous participants (Connolly, 2007).

Strong criticism has been raised concerning the adoption of the objective scientific paradigm to carry out educational studies. It is argued that this paradigm is less successful in capturing the creativity and spontaneity of life in school classrooms. According to Cohen

et al. (2011, p. 7), “the immense complexity of human nature and the elusive and intangible quality of social phenomena contrast strikingly with the order and regularity of the nature world”, making the Positivist approach less effective when applied to educational research.

On the other hand, *Interpretivism* assumes that the social world cannot be directly perceivable because it is constructed by individuals in different ways, and therefore, “it is not simply ‘out there’; it is different for each of us with words and events carrying different meanings in every case” (Thomas, 2009, p. 75). Although researchers must be rigorous in their work to ensure that the outcomes of a study are as credible as possible and based on authentic data, proponents of Interpretivism reject the possibility of having a detached objective observer of the phenomenon being investigated. Conversely, they argue that the social phenomena can only be understood from participants’ points of view. Therefore, to generate knowledge, the researcher must listen to and understand participants’ perceptions, behaviours and interactions with the world around them. Participants can provide the researcher with a whole new view of the social phenomenon being investigated based on thick description from actual behaviour and events in their context (Bryman, 2016).

Social sciences and educational research are traditionally based on a subjective rather than an objective understanding (Cohen et al., 2011) of reality. Interpretivism is thus generally considered the most appropriate paradigm for conducting investigations at schools where the educational practices and the interactions between research participants are considered complex and multifaceted.

Qualitative research is usually associated with Interpretivism (Bryman, 2016). Qualitative research supposes that the social phenomenon must be subjectively understood through participants’ various experiences and that the participants themselves can generate deeper meaning from these experiences (Thomas, 2009). Participants’ words can be used by the researcher to examine the phenomenon to obtain knowledge from it. Therefore, it is unlikely for the variables to be determined beforehand (Thomas, 2009). Instead, the research findings are used by qualitative researchers to develop a theory (Bryman, 2016).

In this study, I adopt Interpretivism as the research paradigm to explore the effectiveness of implementing a cooperative learning approach and procedures in classes at Saudi high schools where teachers and learners are more familiar with traditional lecture-style. I expect the Interpretivist paradigm to give me the ability to gather knowledge from participants’ perceptions, experiences and interactions related to their use of cooperative learning in their lessons.

Although qualitative research is usually associated with Interpretivism and the quantitative approach with Positivism, according to Bryman (2016), this separation only exists at a more superficial level and it is possible to adopt a mixed-methods approach under a single paradigm - which in the present study is Interpretivism. In this study, I adopt a mixed-methods approach where both quantitative and qualitative data is used to attempt to answer the research questions. Data was gathered from various sources by using different tools, such as semi-structured individual interviews (Bryman, 2016), a questionnaire and field notes from classroom observation (Punch, 2009), so that more comprehensive and complex information was obtained to help the researcher gain better understanding of the situation being investigated. In addition, this investigation aims to explore participants' perceptions of cooperative learning by using research tools usually employed in quantitative research to collect numerical data from quite a large number of participants, such as questionnaires (Punch, 2009).

Mixed-methods research can help the researcher to benefit from the strengths and minimise the weakness of both quantitative and qualitative methods of data collection and analysis in one study (Johnson & Onwuegbuzie, 2004). In the present study, gathering the data from quite a large number of students regarding their perceptions of CL was achieved by using questionnaires, which, according to Bell (2010), allow the researcher to make some generalisations based on the findings. However, one of the weaknesses of the quantitative approach is that the findings gathered from the students may lack depth and detail (Denscombe, 2010). This problem can be minimised by using multiple sources of qualitative data, such as semi-structured interviews. Therefore, by adopting a mixed-methods approach in this study I hoped to avoid the issue of lack of detail and gain in-depth information and understanding on the phenomena I investigated.

Research approaches are not 'right' or 'wrong', 'good' or 'bad', but the way of implementing them is likely to determine how appropriate, suitable and beneficial they are in respect to the aims and the research questions (Denscombe, 2010). The nature of the research questions should inform the research approach to be chosen. Because the research questions in the present study are descriptive and explorative in their nature, they required the adoption of a research approach that could provide both descriptive data of the phenomenon investigated, such as the classroom observations and the demographic data collected through the questionnaire, along with more exploratory analysis of the qualitative data collected through the interviews.

3.4 Research design (case study)

A research strategy should be selected based on how it is likely to be successful in achieving the purposes of the research and helping to answer the research questions (Denscombe, 2010). The purpose of the present study is to investigate the effectiveness of using a cooperative learning approach in an all-male Saudi Arabian high school and to analyse the classroom practices being employed by teachers and learners.

There are various possible ways of carrying out this study; for instance, in order to obtain more comprehensive information about the implementation of CL in the research context, a longitudinal ethnographic study (Hammersley & Atkinson, 2007) based on classroom observation and integration with participants could be a suitable alternative. However, such an option was not available in the present case due to time limitations imposed by the scholarship conditions of the researcher.

The study could also have been carried out by using a case study. The case study is a kind of naturalistic methodology that can be used to deeply investigate the social phenomenon in participants' real-life circumstances in a particular time and space (Sharp, 2012). Case studies are set in contexts with clearly defined boundaries (temporal, geographical, institutional) involving individuals and groups that have shared and clearly defined characteristics, roles and functions (Cohen et al., 2011, pp. 289-290). The social phenomenon can be analysed in detail regarding participants' relationships, attitudes, processes, events and experiences by choosing one case or multiple particular cases to be examined (Denscombe, 2010).

The present investigation constitutes a case study to the extent that it looks into research participants who share experiences and practices related to the implementation of CL in their classrooms. Although some researchers collect data from multiple particular cases (Yin, 2014), the present investigation is a single case study where clear geographical and institutional boundaries are established. It investigates one single all-male school in a city in Saudi Arabia while collecting data in that single setting from mixed sources. As Ryan et al. (2002) argue, the nature and the conditions of the cases and research could play an essential role to determine the number of cases and units of analysis. The reason behind this choice is that the participant-teachers work in a single school where there is a larger number of teaching staff working with CL compared to other schools in the area.

One of the strengths of using the case study strategy is that it gives the researcher the ability to use quantitative and qualitative approaches with a variety of research methods (Lee et al., 2010), as is being proposed in this investigation. On the other hand, one of the weaknesses of using the case study strategy is that the findings of the research can be difficult to generalise (Section 3.5, p. 91) because of the small size sample (Blaxter, et al., 2010). However, as is the case in this investigation, the aim of a case study is not to generalise findings to statistical populations but to draw theoretical propositions. The researcher thus seeks to describe, explain and explore theories instead of being over-concerned with statistical generalisations (Ryan et al., 2002). However, when the situations of the case study are typical and similar to other cases in the same educational context, as they are in the present study, an alternative approach is required based on how much a researcher can confidently predict he/she can transfer the findings to similar contexts, which Bassey (2001, p. 19) calls “best estimate of trustworthiness”.

In the Saudi Arabian educational context, the rules, regulations and practices adopted are similar for *all* state schools in the country regardless of the location of such schools (city, countryside, different country regions), the social status of the population they serve, and the fact that they are all single gender (all-male, all-female). For example, textbooks are set and supplied by the Ministry of Education and used in all schools. Similarly, the guidelines and the procedures for the assessment of learners’ performance are also determined by the education authorities and applied to all educational institutions in spite of the possible differences among them mentioned above (Alhogail, 2011; Alnaji, 2014). Most Saudi Arabian teachers who currently use CL received the same training given by the Local Department of Education in a Saudi Arabian city and all participant-teachers in this study have been using this teaching method for more than one year. Moreover, the present study was conducted in an all-male high school that employs approximately 40% of the total number of teachers who have been using CL as a new teaching approach at high schools in the city.

3.5 Issues regarding reliability, validity and trustworthiness

The terms *reliability* and *validity* are connected with the idea of how much the readers of a study can trust the researcher’s honesty and rigour regarding the methods of data collection, analysis and the claims made (Bryman, 2016). Reliability is the degree to which a research tool produces stable and consistent results when the collection and analysis of findings are

repeated, whereas validity refers to the extent to which a test measures what it is supposed to be measuring (Cohen et al., 2011). These terms have been generally used by researchers working with quantitative data and are frequently associated with a more objective view of the value of knowledge acquired through research. There are two kinds of validity: internal validity and external validity. Internal validity indicates that “the findings must describe accurately the phenomena being researched” (Cohen et al., 2011, p. 183). On the other hand, external validity indicates “the degree to which the results can be generalized to the wider population, cases, settings, times or situations” if a similar study is conducted by another person in similar circumstances (p. 186).

Although well-established, these concepts of reliability and validity have been questioned by researchers working with qualitative data and following more critical and constructivist-oriented approaches. Qualitative researchers have argued that, since the data in qualitative research is typically rich and thick as well as subjective and unique to the participants, new concepts and terminology are required where necessary (Guba & Lincoln, 2005). They have thus proposed alternative terms as criteria for assessment of the quality of qualitative research based on the concept of *trustworthiness*, which includes the notions of *credibility*, *transferability*, *dependability* and *conformability* (p. 206). Credibility is related to internal validity and to how much the findings represent the view participants have of their own reality; transferability is related to external validity and to the researcher’s responsibility to describe the research context in a way that makes it possible for other researchers to decide how they can apply the research findings to other contexts; dependability replaces reliability, whereas confirmability is used in the place of objectivity (Shkedi, 2005). This alternative terminology, however, has been criticised by some researchers who believe that it can lead to the danger of making social research too subjective and therefore lacking in rigour and undermining the value of the research claims (Hammersley, 2008).

As a mixed-methods study, I acknowledge the importance of reliability and validity but I also accept the alternative concepts proposed for qualitative data analysis since the concept of transferability is particularly important to this investigation, as is discussed later. In order to increase the reliability of the data collection instruments when the questionnaire and interview questions were designed, I aimed at creating questions that were closely linked to the research questions and that would make it possible to achieve the purposes of the investigation. Another concern was to write interview questions and questionnaire items

that were as clear as possible to avoid creating leading questions that might result in response bias. Most importantly, the items and questions should allow the researcher to have fairly clear access to participants' views of their reality. The main reason for this is that the participants should have, as much as possible, the same understanding of each question and item in the interviews and the questionnaire. According to Cohen et al. (2011), such steps can potentially increase internal validity.

To increase the reliability of the data analysis a sample of the data was submitted to an intercoder for a reliability check. The intercoder was an experienced academic in the field of education and no significant discrepancy was found in the categorisation of the qualitative data or in the quantitative data analysis. The intercoder suggested looking at the relationships between the three year groups studied in this research (Years 10, 11 and 12) and the percentages found in the student questionnaire responses to try to identify possible relationships between students' experience of using CL and their perceptions. In terms of qualitative data, samples of the interviews were submitted for intercoder analysis in order to certify that the quotes selected fitted the themes discussed.

External validity is connected, especially in quantitative research, to the issue of generalisation (Bryman, 2016), which is the extent to which we can infer and understand what happens in a general context based on the findings based on a sample. Because the context of qualitative research tends to be very specific and sometimes unique, it is very difficult to generalise the findings. In addition, although I do not aim to statistically generalise the findings of this study to a wider population, I hope they would transfer to schools in other similar situations. I argue that, if CL teacher training can help teachers achieve desirable changes in such a highly traditional context as the one investigated here, then such an approach may be effective in other similar traditional educational contexts. For this reason, I adopt here the concept of transferability (Guba & Lincoln, 2005), which refers to the extent to which the readers of a piece of research can apply its findings to understand their own contexts. This study is conducted in a school that represents 40% of the schools in Saudi Arabia where cooperative learning has been implemented. However, this is a small sample when compared to the large number of schools in the country where the main form of instruction is lecture-style. Therefore, although generalisability at national level is low, the potential for the relevance of the findings of this investigation to be transferred to other similar schools may be much higher.

A frequent criticism of research based on case studies is its supposedly low levels of reliability, validity and trustworthiness as well as the researcher's bias and lack of rigour (Yin, 2014). However, this problem can be reduced when the researcher triangulates different types of data (Creswell, 2009). Triangulation is possible when two or more data collection methods are used to confirm and examine the validity of the findings so that the results can be more fully explained (Cohen et al., 2011). In the present study, a combination of different quantitative and qualitative means of collecting data (interviews, questionnaire and classroom observations) provided the opportunity to compare and confirm the findings from different sources. Generally speaking, by criss-crossing information collected through different tools, validity can be increased. For instance, the findings of the questionnaire can be corroborated by the interviews, which can provide in-depth explanation for some statistical evidence. According to Punch (2009), triangulation is not only used as a way to compare which data collection tools provide more reliable data than others, but as a way to reduce unclear interpretations and confirm findings. Moreover, collecting data from different participants can also increase trustworthiness and, in this investigation, the views of teachers, students and of the researcher - through the classroom observations - can contribute to that. Collecting data from different schools was initially considered but rejected, because the number of teachers using cooperative learning in schools in the area is limited, and therefore I decided to investigate the school where a significant number of participants could provide relevant data.

Reliability, validity and trustworthiness can also be increased by piloting (Newby, 2010). Pilot studies can be very useful to test data collection tools to predict whether the instruments will be able to allow the researcher to gather good-quality data (Cohen et al., 2011). It is good research practice to pre-examine the interview, observation sheets and questionnaire with a few individuals from the target population in order to confirm that the questions in the data collection tools will be understood by the participants. Piloting the interview questions and the questionnaire has given me an estimate of the average time to complete the questionnaire or the interview. Piloting the observation sheets has helped me to determine the number of classroom observations and how to collect data effectively (Cohen et al., 2011; Flick, 2009; Newby, 2010). The piloting process has aided the creation of the final versions of the observations, interview questions and the questionnaire (Appendices E, F, G and H, pp. 227-241).

Since the research participants' language of communication is not English, the interview questions and the questionnaire were translated from English into Arabic by the researcher and reviewed by a speaker fluent in both languages. They were then sent to two Saudi Arabian teachers and two students who use cooperative learning in schools other than the one being investigated in this study. Their feedback and comments were considered and small changes made where appropriate (Appendices E, F, G and H, pp. 227-241). A detailed discussion about the piloting and changes made on the data collection instruments is provided in section 3.7 (pp. 95-102) on the research tools.

3.6 Research sampling

There are different approaches to sampling. However, they can be divided into two broad categories: random and non-random. Random samples (Denscombe, 2010, pp. 27-33) are based on probability and can employ different techniques: *systematic*, when "every *n*th case is included"; *cluster* sampling, where specific groups within a population are identified; *multi-stage* samples, when sub-samples are drawn from an initial larger sample; and *stratified*, when the sample is based on subgroups in a given population. Non-random, or non-probability, sampling (Denscombe, 2010, pp. 34-38) presupposes the selection of participants based on certain criteria determined by the researcher. These can be *quota* samples, when a certain number of participants is required within each group category; *purposive*, when participants are selected for the sample because of their knowledge and experience; *theoretical*, when participants are selected because they can "help generate theories"; *snowball*, when "participants refer the researcher to other potential participants"; and *convenience* sample, when - due to some constraint beyond the researcher's control - these are the only participants available or accessible.

This study uses purposive sampling, which "operates on the principle that we can acquire the best information focusing on a relatively small number of instances deliberately selected on the basis of their known attributes" (Denscombe, 2010, p. 34). The teachers and students in the present study have been selected because they have been trained to use cooperative learning by the Local Department of Education. These teachers work in a school where there is a larger number of teaching staff working with CL compared to other schools in the area. Purposive sampling is considered to be an important strategy to access the participants who are related to the questions of the study (Dornyei, 2007). This kind of sample was considered to be the most appropriate to this investigation as it encourages the

researcher to select a suitable range of people who have in-depth understanding and knowledge about CL. The researcher received information about these teachers and students from the Local Department of Education, which also granted the researcher access to them. Permission to conduct the research in this school was granted by the Local Department of Education by email and letter of permission was sent to the head teacher asking him to receive the researcher.

The participant-teachers and students are members of a governmental regular all-male high school. This specific school was chosen because the Local Department of Education has systematically conducted observation and school inspections for a year and a half in order to support teacher who have been using cooperative learning with their students. Moreover, this particular school was chosen because it has the largest number of teachers using CL in the area. In terms of sample size, the number of participant-teachers was eight, working with Years 10, 11 and 12. In order to collect information from a wide range of perspectives, the sample sought to include teachers who were in different age groups, came from different social and cultural backgrounds, and had diverse educational and professional experiences. Ninety-seven participant-students were in mixed-ability classes in Years 10, 11, and 12. There are several classes in each of these Years. In each Year, one class was selected for data collection. The criteria for selecting the classes was the larger number of participant-teachers using CL with one particular class. For example, in Year 10, Class A had only the Biology teacher using CL whereas Class C had the Biology, the Arabic, and the Maths teachers using CL; therefore, Class C was chosen for data collection in Year 10.

The total target population was 20 teachers who have been using CL as a new teaching approach at high schools in the city, and therefore the sample of the present study represents approximately 40% of the total number of teachers. The teachers and students were selected according to the following criteria:

- All participant-teachers should have received CPD training in using CL provided by the Local Department of Education;
- All participant-teachers should have at least one year's experience of using CL in their classes;
- All participant-teachers should have at least four year's experience of teaching different subjects at high schools;

- All participant-students should be attending any subject lessons in these teachers' classes.

In spite of the established criteria above, two teachers (T7 and T8) who did not fit exactly into it were included as research participants. This was a decision made by the researcher taking into consideration the particularity of the research setting. Although T7 did not receive the full formal in-service training in CL and T8 did not attend the programme at all, the researcher decided for their inclusion because both were using CL based on the five principles (Johnson & Johnson, 2014) in their lessons. This fact was considered relevant to the main aims of the study as their involvement could provide data related to the perceptions and practices of teachers who received partial formal training (T7) or only informal training (T8). It was also considered significant that both teachers (T7 and T8) acquired substantial knowledge of CL because other participants shared with them knowledge and practices learnt in the formal CL training programme. The inclusion of these teachers was based on the understanding that participants with different training experiences could provide more information to the researcher about how these differences may impact on teachers' implementation of CL based on the five principles.

In addition to the data collected on CL with the three groups investigated (Years 10, 11 and 12), three lecture-style lessons were also observed for purposes of comparing and contrasting students' behaviour in the classroom. The lecture-style lessons were delivered by other teachers in different subjects to the same CL groups investigated in this study.

3.7 Methods of Data Collection

In order to provide a more comprehensive picture of the issue under investigation rather than isolated factors, data from teachers and students was collected by using semi-structured interviews, classroom observations and a questionnaire. The *qualitative* data was gathered from the participants' actions and words to capture behaviours and perceptions. Semi-structured interviews were used with eight teachers and nine students. The teachers were interviewed twice, before and after the classroom observations. The students' interview sample was conducted after the students completed a questionnaire as a way of gathering richer data and gain access to learners' narratives of their experiences. Forty-eight classroom observations also provided qualitative data from both teachers and students in the form of field notes. The *quantitative* data was gathered using the previously mentioned questionnaire collected from 95 students to help understand their general views

regarding using CL. The classroom observation checklist also served as a means of collecting some quantitative data.

3.7.1 Semi-structured interviews

According to Punch (2005), the interview is a very useful way to access participants' perceptions, definitions, meanings of situations and construction of reality as well as it is considered the most powerful tool to understand others. The interview can be implemented as a main tool to collect data having a direct effect on the aims of the research. Interviews are used to examine hypotheses or to propose new ones, or they aid in determining relationships and variables as an explanatory device, and can be implemented in connection with other methods in a research undertaking (Cohen et al., 2011).

There are three basic interview sub-types: structured interviews, unstructured interviews and semi-structured interviews (Thomas, 2009). I decided to choose semi-structured interviews because they combine the benefits of both unstructured and structured interviews. A semi-structured interview is a flexible tool; this means that new questions can be added and asked during the interview in the light of what the participants say. Moreover, it gives the researcher the ability to probe for further knowledge and information since not all the interview questions are designed in advance. Structured interviews, on the other hand, are not very flexible and generally involve closed-ended questions, with each participant being asked exactly the same questions so the data can be supposedly easier to analyse (Thomas, 2009). Unstructured interviews involve no pre-specified open-ended questions and are used when there is no pre-determined format to the interview beyond the topic being investigated. According to Thomas (2009, p. 163), "the idea behind unstructured interview is that interviewees should be allowed to set the agenda", but they more difficult to conduct than semi-structured interviews since they require the researcher to expend more time and effort to analyse the data.

In this investigation, I used semi-structured interviews with pre-determined questions that were asked to each participant along with open-ended and non-standardised questions that helped me gather in-depth information from participants' perceptions and experiences regarding key issues in CL (Bryman, 2016).

In order to attempt to answer Research Question (RQ) 1, face-to-face semi-structured interviews (Appendix E, p. 227) were individually conducted with eight teachers. The first part of the interview consisted of general questions based on the research

questions with a focus on teachers' perceptions of CL methods, specifically asking about participant-teachers' understanding of cooperative concepts and issues related to cooperative learning, the advantages and challenges of implementing CL, and factors affecting its use (Table 3.1).

Table 3.1: The connection between themes and interview questions for RQ1

Research question	Themes	Interview questions
RQ1	Background information	Q1 – Q2
	Teacher training	Q3
	Definition and knowledge acquisition	Q4 – Q7
	Teachers' and students' roles	Q8 – Q9
	Factors affecting the use of CL	Q10 – Q11
	Advantages	Q12 – Q13
	Disadvantages	Q14

In order to answer RQ 2, the questions asked in the second interview (Appendix E, p. 227) focused on the actual practices and procedures teachers use to implement CL in their lessons. The second round of interviews with the teachers took place after the classroom observations (Section 3.7.3, pp. 101-103) and consisted of pre-designed questions (Table 3.2) along with follow-up questions based on participants' initial answers as well as questions based on the researcher's observation notes.

Table 3.2: The connection between themes and pre-determined interview questions for RQ2

Research question	Themes	Interview questions
RQ2	Lesson planning	Q1
	Group composition	Q2
	Implementation of the CL principles	Q3
	Monitoring	Q4
	Rewards	Q5
	Assessment and evaluation	Q6

Semi-structured interviews (Appendix F, p. 230) were also used with a random sample of students taken from the 92 who had provided complete, valid responses out of the 95 questionnaires collected. Among these 92, 13 students had ticked the box at the end of the form stating that they would be willing to provide further data for the research. From these 13 volunteers, three students from each of the three classes investigated were randomly selected, making a total of nine students being interviewed. The risk of adopting such a strategy is that there could be very few or no students volunteering for the interviews. For this reason, a presentation was given to learners at the beginning of the process, which is discussed later (Sections 3.7.2, pp. 99-100 and 3.8.1, p. 104). In case this proved insufficient, I planned to go back to the classrooms and ask for students' collaboration once again.

The interviews aimed to gather some qualitative data to understand learners' perceptions and attitudes towards cooperative learning and complement the data collected from the questionnaire. Therefore, some interview questions with students were designed to answer the third research question. This part of the interview consists of general questions based on RQ 3 with a focus on students' perceptions of CL methods, specifically asking about academic and social outcomes, behaviour in group work, classroom procedures adopted by the teacher and challenges of working cooperatively.

This helped me collect qualitative data and quantitative data on the same key issues mentioned above. Further questions asked to students in the interviews were based on the findings of the questionnaire in order to gain a deeper understanding of their perceptions and attitudes towards CL and support data that was collected using the questionnaire (Table 3.3).

Table 3.3: The connection between themes and students' interview questions for RQ3

Research question	Themes	Interview questions
RQ3	Academic outcomes	Q1 – Q5
	Social outcomes	
	Classroom procedures adopted by the teacher	Q6 – Q8
	Behaviour in group work	Q9 – Q12
	Challenges of working cooperatively	Q13

In the process of piloting the interviews, the Local Department of Education provided information that enabled me to contact two Saudi Arabian teachers who use cooperative learning but work in schools other than the one being investigated in this study. Each teacher was interviewed twice on different days using Skype. The average time to complete each interview was 53 minutes. Each teacher was asked to introduce me to one student who I could also interview on Skype. Students were interviewed after completing the questionnaire because the findings of the questionnaire were used to create new questions for the students' interviews. The average time to complete each interview was 42 minutes. The piloting allowed me to check the average time to complete the interview, the clarity and understanding of the questions, and to add or remove some questions. Their feedback and comments were considered and small changes made where appropriate (Appendix E and F, pp. 227-230).

Interviews were audio recorded and conducted in the participants' mother tongue, which is Arabic. The recordings were then transcribed into Arabic and the data was analysed. Later, some relevant extracts from the analysis were translated into English by a professional translator working in the English department at a local university in Saudi Arabia. These extracts were then back translated into Arabic by the researcher for purposes of confirmation and quality assurance.

3.7.2 Questionnaire

According to Bell (2010), the aim of using a questionnaire is to obtain responses to the same questions from a considerable number of participants to give the researcher the ability to compare between participants' answers and variables. In the present study, the questionnaire was distributed to 95 students to gain understanding from their responses. Three of these were discarded for being incomplete and thus 92 were considered in the analysis. Using the questionnaire facilitates the rating of students' perceptions on discrete items such as their views on the benefits, challenges and procedures of using CL, by using Likert scale items (Muijs, 2004). Open questions were then added to the questionnaire items to allow students to comment on the items and add any further information they believed to be relevant and wished to convey. Moreover, using a questionnaire enables researchers to reach a wide range of students cost- and time-effectively to gather a considerable amount of information and data in comparison with other data collection tools. Furthermore, quantitative data can be easily analysed by using statistical methods because it is pre-coded (Denscombe, 2010).

In order to try to answer Research Question 3 (Table 3.4, below), a questionnaire (Appendix G, p. 231) with closed and open-ended questions was used to gather both quantitative and qualitative responses on learners' perceptions of and attitudes towards using cooperative learning. The questionnaire was expected to give the researcher access to a considerable number of learners. It consisted of closed questions that involved multiple choices and rating scales, as well as open questions to explore the issues related to research questions (Dornyei, 2010). The first part of the questionnaire was designed to draw general information about learners and their perceptions about using cooperative learning. The second part focused on academic outcomes of using cooperative learning, whereas the third part asked about its social outcomes. The fourth part covered students' perceptions of the procedures adopted by the teacher and their behaviour in group work. The final part investigated learners' challenges in using cooperative learning. Although the questionnaire helped me to gather numerical data that can lead to some generalisations of findings (Dornyei, 2010), it was also important to gather some qualitative data from the learners, which came from the semi-structured interviews mentioned above.

One of the drawbacks of using questionnaires is a low response rate. According to Denscombe (2010), some participants might easily ignore the questionnaire, leading to quite low response rates and making it quite a challenge for the researcher to obtain a reasonable response rate. Therefore, I gave a short presentation to the students about the importance of participation in this research and the aims behind the study. This was intended to motivate them to fill in the questionnaire and improve both response rate and quality. This strategy proved to be quite successful since all students attending the lessons (95) filled in the questionnaire forms and 13 volunteered to be interviewed.

Table 3.4: The connection between RQ3, the questionnaire and students' interviews

Research question	Students' themes	Questionnaire questions	Interview questions
RQ3	Academic outcomes	Section C Q9 – Q16	Q1 – Q5
	Social outcomes	Section D Q17 – Q22	
	Classroom procedures adopted by the teacher	Section E Q23 – Q31	Q6 – Q8
	Behaviour in group work	Section F Q32 – Q46	Q9 – Q12
	Challenges of working cooperatively	Section G Q47	Q13

As for piloting, according to Dornyei (2010), the questionnaires should be pre-tested with a sample of participants who are similar to the target sample for which the questionnaire has been designed. The questionnaire was sent to the two students indicated by the teachers with whom the interview was piloted, as described above; the students then returned the questionnaire files by email. According to the teachers overseeing the process of answering the questionnaire, the students took 30 and 35 minutes to complete it. Feedback and comments on the clarity and suitability of the questionnaire items were considered and small changes made where appropriate (Appendix G, p. 231).

3.7.3 Classroom observation

According to Denscombe (2010), observation can offer the social researcher a special way to collect the data which does not depend on what participants ‘say they do, or what they say they think’. It relies on “the direct evidence of the eye to witness events at first hand. It is based on the premise that, for certain purposes, it is best to observe what actually happens” (p. 196). Therefore, observation can give the researcher the ability to study behaviour as it happens and to record events as they occur. The aim of classroom observation is to provide a means for the researcher to see what is happening in the classroom in terms of teachers’ practices and students’ attitudes and behaviours towards cooperative learning in a natural setting (Newby, 2010). Although a weakness of classroom observation is that it does not provide the ability to make generalisations (Denscombe, 2010), it can still help the researcher gain information that supports or clarifies the data collected from teachers and learners’ interviews and questionnaires. Observations can potentially give the research access to information about the classroom environment and teaching practices that is not directly provided by the participants (Denscombe, 2010). However, one of the disadvantages of observation is that teachers or students can behave differently when they are observed by the researcher (Denscombe, 2010). Therefore, in the present study, I made efforts to build good relationships with teachers and students. I gave a short presentation about the objectives of the research to help teachers and students to behave as naturally as possible.

Carrying out classroom observation requires considerable effort and time to analyse the data (Cohen et al., 2011), and pre-coded observations have been used in order to facilitate the process. The observations conducted in this study were both structured, i.e., “based on predetermined categories”; and unstructured, with a “focus on the larger patterns of behaviour, more holistically and more macroscopically” (Punch, 2009, p. 155). The pre-

coded items are related to cooperative learning classroom procedures with a focus on group variables, environmental variables, staff variables, instructional five principles of using CL (Johnson & Johnson, 2014), assessment, and the total amount of lesson time that should be devoted to cooperative activities (Appendix H, p. 237). The observations were used to collect qualitative and quantitative data regarding teaching practices to which the researcher added observation notes in order to answer Research Question 2. There is a need for quantitative data that can help fill the gap in the literature to understand to what extent each instructional principle of using CL should be used in each lesson, and the total amount of lesson time that should be devoted to cooperative activities. Further qualitative data was collected from students using another pre-coded observation sheet based on the five principles of using CL (Johnson & Johnson, 2014) (Appendix H, p. 237), and notes to cover learners' classroom interaction and behaviours during group work.

Qualitative data was also collected through general field notes, which were post-coded considering emerging themes (Punch, 2009). Notes were taken to describe the setting and the classroom events; in addition, direct quotes from the classroom interactions were written down based on audio recordings of the lessons.

Because of practical difficulties and limited time to travel to Saudi Arabia to pilot the observation sheets with a sample of the target population, I contacted a number of schools in Leicester to pilot my observation sheets with teachers who use cooperative learning with their students. Although it was difficult to obtain permission to do that, one school gave me permission to observe one teacher twice. After piloting, the initial observation sheets were edited and a final version produced (Appendix H, p. 237). Conducting observation at the piloting stage made me decide that observing one teacher twice was not enough to understand to what extent each principle of Johnson and Johnson's (2014) five principles of using CL should be used in each lesson. As a result, the initial plan of observing each teacher twice had to be reconsidered and the number of observations was increased. According to Denscombe (2010, p. 208), "the longer the researcher is able to spend 'on site' the better, because the longer he or she is part of the action, the more can be learnt about the situation". Therefore, I decided to observe each teacher eight times, one observation for each teacher every week over eight weeks, each of 45 minutes (the whole class period). I expected this to enable me to observe the whole class, for almost the entire semester and across different subjects. In addition, I decided to observe three lessons with teachers who do not use CL but instead use lecture-style methods with the same students

who are taught by other teachers using CL. Qualitative data should be collected from these observations using general field notes. This could help me to understand their perceptions and attitudes in depth when they are interviewed. There would be 64 observations with teachers who use CL and, in principle, three observations with teachers who use traditional methods with the same students. The number of observations in the lecture-style lessons was considerably lower because quantitative data was not collected; instead, the focus was on understanding the classroom environment and as a way of shedding light on students' responses in the interviews.

The qualitative data collected using the tools above was analysed using thematic analysis. According to Bryman (2016), thematic analysis does not have a clear, identifiable source but can be detected in most studies that use qualitative analysis approaches. The researcher starts with some pre-coding and adds inductive analysis to it. The use of both inductive and deductive processes adopted in this study is discussed in more detail later (Section 3.9, p. 106). For thematic analysis, the UK National Centre for Social Research suggests a framework in which the researcher constructs an “index of central themes and sub-themes” (Bryman, 2016, p. 585) that result from various readings of the data provided in the transcripts and field notes and which are thus dependent on the researcher's interpretation of the data. The themes and sub-themes adopted in this study (Section 3.9 - Figure 3.1, p. 109) were first created based on the five principles of corporative learning proposed by Johnson and Johnson (2014) and the particular aspects related to them in relation to perceptions, practices and behaviours identified in the literature review. Repetition of topics and ideas was the basic criterion for maintaining these initial subthemes and also adding new ones, as long as such repetition was relevant to the research questions. Bryman (2016) also emphasises the importance of connecting such themes and discussing their implications for the understanding of the phenomena studied.

The quantitative data collected from the questionnaire and observation checklist tool was analysed using frequencies, percentages and cross-tabulation. Such statistical data helps to identify specific differences between individual participants, serves as a way of comparing differences between groups and helps establish degrees of possible relationships between them (Bryman, 2016). Cohen et al. (2011) discuss ways of presenting frequencies, percentages and cross tabulation and recommend using tables, graphs and charts to make data accessible to readers, as used in this study (Chapter 4, pp. 114-168 and Appendix K, p. 254).

3.8 Data Collection

3.8.1 Initial plan and changes

An informed consent letter (Appendix D, p. 226) to carry out the research was sent by email to the head teacher of the school by the Local Department of Education. The design of the research required a period of data collection of approximately three months between August and November 2015. The teachers and students who participated in the study were contacted by the school principal to ask if they were interested in participating in this study. The next stage was to meet the teachers and give them a short presentation about the aims and the importance of the study and then discuss the timetable for the interviews, observations and to distribute the questionnaire to the students. Table 3.5 below describes the process of data collection in more detail as it was predicted at this stage. These first contacts were important to establish a good relationship with the participants, which helped to collect good-quality data, create a sense of ownership of the research among participants, and develop a successful collaborative relationship. A short presentation was given to participant students for the same reasons.

Table 3.5: Initial plan for data collection

Weeks	Method of data collection	The participants	Researcher role	Description
1	Interview	Teachers	Interview teachers	The first interview for teachers (interview two teachers every day).
2 – 9	Observation	Teachers and students	Observer	Observe teachers with their students (observe two teachers with their students every day).
10	Interview	Teachers	Interview teachers	The second interview for teachers (interview two teachers every day).
11	Questionnaire	Students	Coordinator	In two days of week 11, the teachers distribute the questionnaire to their students and collect them.
11	Observation	Teachers and students	Observer	In one day of week 11, observe three teachers who use traditional methods with the same students.
12	Interview	Students	Interview students	Students' interviews (interview two students every day).

Most of the steps above were followed as planned; however, some changes were necessary. Regarding the teachers' interviews; they were conducted over a period of five days instead of the four days initially planned. Due to the absence of two teachers, one on the second day and another on the fourth day, these interviews had to be rescheduled and took place on a subsequent day. This showed the importance of having a flexible timetable and arrangement for interviews. This was also important in the case of the classroom observations as the session planned to happen on 16th September had to be rescheduled to the following day due to the teacher's absence. Another factor affecting the observations was the occurrence of a two-week public holiday during the period of the data collection, which meant that the initial plan to carry out eight classroom observations for each teacher was not feasible and this number was reduced to six. Although there was a reduction in number, I do not believe that this had any impact on the quality of the data collected since after four observations it was clear to me that little new and significant information would be likely to be collected by increasing the number of lessons observed.

As for the questionnaires, they were distributed to 95 students instead of 97, as initially planned, because two students were absent on the day. From these 95 questionnaires, three had incomplete data regarding the closed questions and were discarded from the statistical analysis in order to avoid skewing the data. Responses to the open questions were few but these questionnaires were still considered in the data analysis since questionnaire open questions are intended to collect possible extra information but incompleteness does not affect the quantitative data analysis. Moreover, qualitative data from the students was mostly collected through the interviews. Interviews with the students proceeded according to the initial plan.

3.8.2 Data collection procedure

The data was collected between mid-August and mid - November 2015 and conducted in various stages (Table 3.6).

Table 3.6: Data collection timetable

Teachers' interviews: First round	Cooperative Learning classroom observations	Teachers' interviews: Second round	Students' questionnaire	Lecture-style classroom observations	Students' interviews
6 th Sep – 10 th Sep	13 th Sep – 21 th Oct	25 th Oct – 28 th Oct	1 st Nov – 2 nd Nov	3 rd Nov – 4 th Nov	8 th Nov – 12 th Nov

Interviews with teachers and the classroom observations were scheduled on the day of the first meeting with the teaching staff. Teachers' interviews were conducted in a private room in the school library. They took approximately one hour each, were conducted in Arabic and audio recorded. The same procedure was adopted for the students' interviews but these lasted for approximately 45 minutes only.

For the classroom observations, a combination of field notes and audio recordings was used. In each session a classroom desk for the researcher was placed randomly near one group of students but also usually quite near the teacher so it was possible to capture the audio from both. The audio recorder was placed on the researcher's desk. Three different observation sheets were used for the field notes. While the teachers were talking and there was general classroom interaction, the researcher's attention was focused on the teacher observation sheet and the general field notes sheet. While students were working cooperatively, the researcher's focus changed to the students' interaction happening in the group near the researcher's desk and notes were taken on the student observation sheet.

For the observations conducted in the lecturer-style lessons, teachers and sessions were selected by the school administration and relevant information on the research was provided by the school principal. In these sessions, the observer was situated at the back of the classroom and took general field notes on a black observation sheet. No recordings were made.

Students' questionnaires were answered in class to guarantee higher response rates. After giving the explanations and instructions, the researcher asked the teacher to be responsible for collecting all the questionnaire sheets, putting them in an envelope and giving this to the researcher when the process was completed. The researcher then left the room in order to avoid putting students under pressure to answer the questions.

3.9 Data Analysis

3.9.1 Qualitative data analysis

Recording the interviews made it possible to later access the whole conversations with the participants. Then, the interviews were transcribed from the recordings. Participants' personal information, such as their names and the name of the school, were transcribed with codes in order to ensure anonymity and confidentiality (Cohen et al., 2011). Qualitative data collected from semi-structured interviews with teachers and students, as

well as classroom observation field notes, were submitted to thematic analysis (Bryman, 2016), considering the research questions and the interview questions for the pre-coded main themes (Appendix J, p. 243).

According to Attride-Stirling (2001), the findings from disorganised and initial raw data can be organised when the materials are analysed in a methodical way, and therefore qualitative data analysis process in the present study was based on deductive and inductive analysis. Based on the process of analysing qualitative data suggested by Bryman (2016), Cohen et al. (2011) and Newby (2010), the practical steps that were adopted in the present study are summarised below (Table 3.7).

Table 3.7: Process of qualitative data analysis

<p>Stage 1: Deductive analysis</p> <ol style="list-style-type: none"> 1) Read all the data and take notes. 2) Colour-code the data based on pre-determined themes based on the research questions and the interview questions. 3) Refine and review the codes as appropriate. 4) Re-analyse and re-present the grouped data according to possible groupings of issues under the main themes.
<p>Stage 2: Inductive analysis</p> <ol style="list-style-type: none"> 1) Re-read the data that does not match the pre-determined themes. 2) Analyse the remaining data by establishing connections of similarities and differences between elements in the data coming from different data sets (interviews, classroom observation). 3) Re-analysis of the remaining data for possible relocation into the existing themes, merging, or the creation of new themes. 4) Analysis of the final themes. 5) Comment on the results. 6) Discuss the differences and similarities among the teachers and students' answers, and then discuss their findings with those reviewed in the literature to write a report.

In this process, the raw data was first broken down into categories or sub-categories (Corbin & Strauss, 2008), which in this study I call themes and sub-themes. The deductive analysis method led to the creation of the initial pre-determined themes and sub-themes represented in Table 3.8 below. In addition, the remaining qualitative data was submitted to inductive analysis, sometimes called “data-driven or open coding”, in order to cover other

emerging themes (Fade & Swift, 2011, p. 108). Inductive analysis, or open coding, is thus the process in which the researcher closely examines the data in order to generate new conceptual labels (categories or themes) based on the researcher's understanding of the similarities or differences between the indicators (Punch, 2005). Data was colour-coded to help identify such sub-themes. Therefore, some of the initial themes were then renamed or re-located.

In the main theme 'teachers' perceptions', the sub-theme 'teachers' and students' roles' was replaced by the sub-theme *classroom roles, responsibilities and authority* because the qualitative data showed that there were differences in teachers' perceptions of responsibility and the use of authority in the classroom between those in CL classes and those using the traditional lecture-style. Such perceptions directly related to how these participants perceived their roles in the classroom. A second change in the same main theme was the splitting of the sub-theme 'factors affecting the use of CL' into two different sub-themes: *challenges and difficulties affecting CL* and *factors supporting CL*. Such division was necessary because the analysis revealed that these factors fell into distinctive groups and such division would make this clearer to the reader. In the second main-theme, 'teacher's practices', two new themes had to be added based on the emerging data: *arranging the classroom and explaining the task*, and *students' behaviours in group work*. There was no need to make any changes in the third main theme which was related to 'students' perceptions'.

Table 3.8: Initial pre-determined themes

Teachers' perceptions	Teachers' practices	Students' perceptions
Teacher training	Lesson plan	General perceptions of CL
Definition and knowledge acquisition	Group composition	Academic outcomes
Teachers' and students' roles	Implementation of the CL principles	Social outcomes
Factors affecting the use of CL	Monitoring	Classroom procedures adopted by the teacher
Advantages	Rewards	Behaviour in group work
Disadvantages	Assessment and evaluation	Challenges of working cooperatively

The whole analytical processes (Appendix J, p. 243) resulted in the final analytical configuration (Figure 3.1, below), which shows the themes and sub-themes emerging from both the deductive and inductive analysis based on the research questions and the interview

questions. They cover *teachers' perceptions* related to training, their understanding of CL concepts and theories about knowledge acquisitions, classroom roles, responsibilities and authority, the challenges and difficulties affecting CL, the supporting factors affecting CL, and the advantages and disadvantages of implementing CL in their teaching. The second main theme is related to particular aspects of the *teachers' practices*, such as the lesson plan, group composition, the arrangement of the classroom and the explanation of the tasks, implementation of the five principles of CL, student's behaviours in groups, monitoring students, using rewards, and assessment and evaluation. In addition, *students' perceptions* were considered in terms of their general perception of CL, academic and social outcomes, classroom procedures adopted by the teacher, classroom behaviour and challenges of working cooperatively.

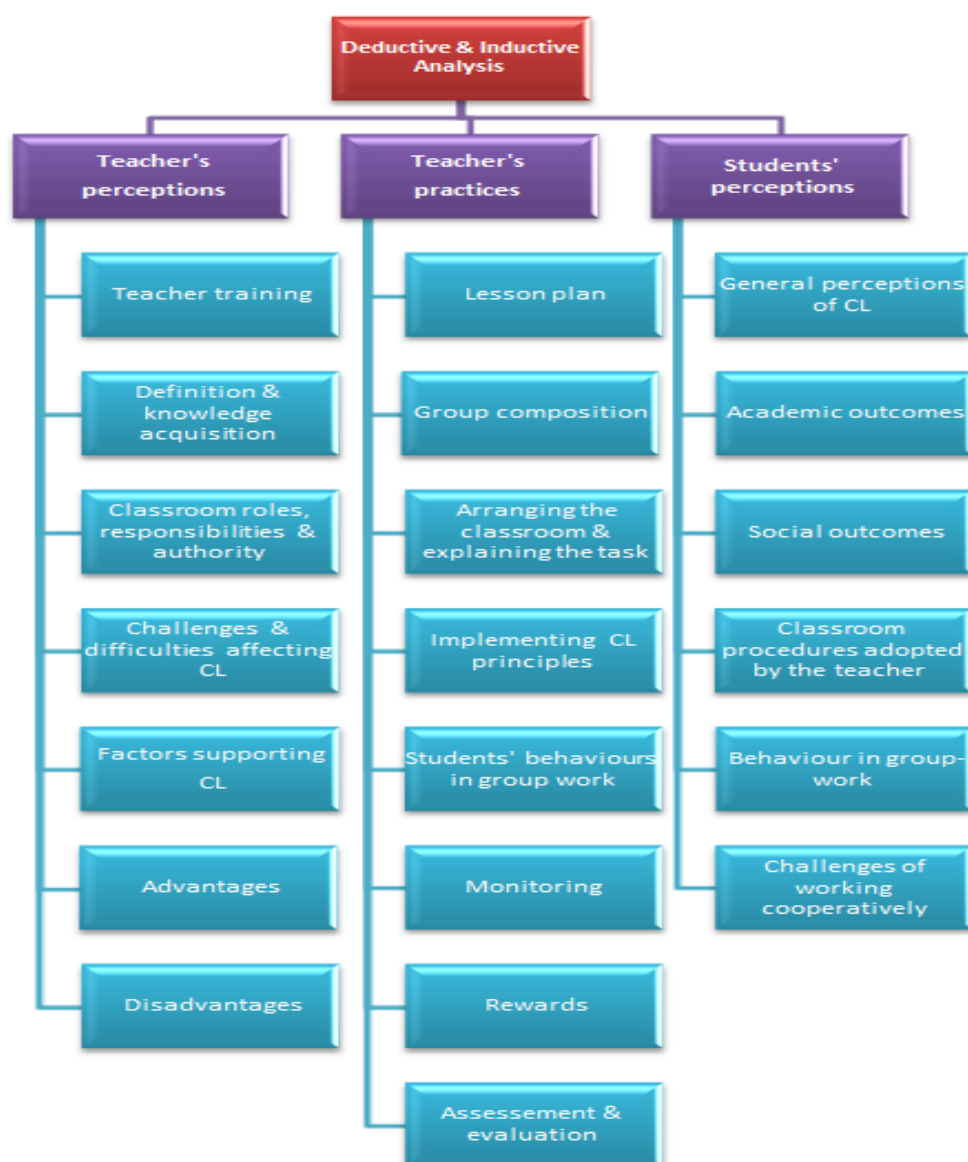


Figure 3.1: Themes in the qualitative and quantitative data analysis

3.9.2 Quantitative data analysis

Descriptive statistics were used in the present study to examine quantitative data collected from the closed questions in the students' questionnaire and also from the classroom observation checklist. The questionnaire data was converted into percentages to identify recurrent themes, which helped the researcher compare between participants' opinions and the events observed in the classroom. The data was then analysed using SPSS in terms of frequencies, percentages and cross tabulation (Bryman, 2016) to compare quantitative data from the different years (Appendices G, p. 231; K, p. 254 and Chapter 4, pp. 153-169). The percentage and frequencies helped me understand and observe the outcomes from the students' answers regarding their perceptions in relation to academic and social benefits, classroom procedures adopted by the teacher, challenges of working cooperatively and classroom behaviour. The observation checklist data shows the extent to which each instructional principle of using CL was used in each lesson (in frequency) as well as the total amount of lesson time that was devoted to cooperative activities (in percentage). Questionnaire open questions followed some of the closed questions and were intended to gather more detailed information on students' opinions and perceptions. However, students did not provide any relevant information in the open questions.

The findings of the students' questionnaire were analysed before the student interviews were conducted, in order to add other questions in the interviews, as required. This helped gain a deeper understanding of students' perceptions and attitudes towards CL and support data that was collected from the questionnaire method. Then, the qualitative and quantitative data from the semi-structured interviews, observations and questionnaire was coded into the main themes that correspond to the main research questions. The practical steps (Dornyei, 2010) that were adopted in the present study are summarised in Table 3.9.

Table 3.9: Process of quantitative data analysis

- 1) Divide the data according to teacher's classes and assign numbers to each class.
- 2) Convert the participants' answers to numbers, such as pre-determined response options in Likert scales.
- 3) Input the data into a spreadsheet.
- 4) Create and name the data files.
- 5) Conduct the key data analysis using descriptive statistics (frequencies, percentages and cross-tabulation).
- 6) Comment on the results.
- 7) Discuss the differences and similarities between the answers among teachers and students, and then discuss their findings with those reviewed in the literature to write a report.

All data was collected in Arabic, which is the participants' original language. Participants' answers to the interviews and questionnaire were analysed and relevant passages were translated into English following the process previously described in Section 3.7.1 (p. 99).

3.10 Ethical Considerations

Ethical issues are essential and should be considered before conducting research (Bryman, 2016) because they directly connect to the integrity of a study and of the disciplines that are involved. Ethical guidelines "are intended to help keep participants safe from harm, build trust with participants and ensure trustworthy outcomes from the research which will benefit society" (Busher & James, 2012, p. 1). The nature of the research, the methods of data collection, and the participants in the study play an essential role to shed light on ethical issues that should be taken into account (Potter, 2006).

According to Thomas (2009), researchers should follow a university's formal procedures to ensure ethical practice in social science research. Consequently, in this study appropriate ethical approval was thus requested from the University Ethics Committee (Appendix I, p. 242). In addition, another important issue regarding research ethics is participants' consent. However, it is not simply a case of participant agreement but also a form of creating a sense of ownership of the research and developing a successful collaborative relationship between researcher, gatekeepers and participants (Busher & James, 2012). According to Thomas (2009, pp. 149-150), there should be *informed consent*,

which means that potential participants should understand to what they are agreeing. When designing a letter of consent, researchers should include the following points:

1. The nature and purpose of the study, including its methods.
2. Expected benefits of the study.
3. Possible harm that may come from the study.
4. Information about confidentiality, anonymity, and when and how data will be kept and destroyed.
5. Ethical procedures being followed and the appeals process.
6. The researcher's name and contact details.
7. The option for a potential participant to choose to take part or not.

In this study these principles were taken into consideration when designing the consent letters found in Appendices A, B and C, (pp. 221-225). These letters were then sent to participants and they were informed that their contributions would be solely used for research and educational purposes. In this letter, participants were also informed of the aim of conducting the present study. Any participant would have the right to refuse to participate or withdraw at any stage of the study process. All personal data has been treated as anonymous and confidential, securely stored in the researcher's computer and password protected. Anonymity was guaranteed by assigning a number to each participant during the analysis process. All data will be destroyed after a period established by the University of Leicester's ethical guidelines. A summary of the findings of the present study will be sent to the principal of the school involved in this project, if requested, and a copy of the final thesis will be sent to The Saudi Cultural Bureau, which has sponsored this research.

3.11 Summary

This chapter has discussed various aspects related to the process of conducting research, from the theoretical considerations to the practical aspects of gaining access to the research site, and the procedures for data collection and analysis. This study is based on the belief that educators and researchers should conduct investigations that are relevant to the educational context in which they are carried out and that may contribute to the development of the educational systems and practices. It is also based on the belief that the research design should create opportunities for participants to express their views and share their perceptions and experiences on the phenomena being investigated to give the researcher an insight into the participants' teaching context regarding their use of

cooperative learning. This study adopts a mixed-methods approach to build on the strengths of each one in order to gain a more comprehensive picture of the use of CL in the research setting. Quantitative and qualitative research tools were employed in order to triangulate data from both teachers and students. The analysis of the qualitative data was followed by an inductive and deductive approach and the quantitative data was submitted to descriptive statistical analysis. This study is based on the principle that it is the researcher's responsibility to deal ethically with the participants and the data collected.

Chapter 4: Research Findings

4.1 Introduction

This section shows the research findings and briefly discusses them in the light of the research questions below.

1. What are the perceptions of cooperative learning by participant-teachers who received training on it?
2. Which teaching practices do participant-teachers currently employ when facilitating cooperative learning work in the classroom?
3. What are participant-students' perceptions of the benefits and challenges of cooperative learning?

In order to answer the research questions, the data was obtained through semi-structured interviews, classroom observations and a questionnaire (Section 3.7, p. 95). Qualitative data collected from semi-structured interviews with teachers and students, as well as classroom observation field notes, was submitted to thematic analysis considering the research questions and the interview questions for the pre-coded main themes. Additional themes also emerged from the inductive analysis (Chapter 3, Figure 1, p. 109). The quantitative findings were collected from the student questionnaire and from the classroom observation checklist. The data was then analysed in terms of frequencies, percentages and cross-tabulation.

For Research Question 1, only data from the first round of interviews was considered because the interviews aimed at accessing participant-teachers' perceptions of cooperative learning (CL). The triangulation of the relevant data that was collected from different methods was used to present a collective answer to Research Questions 2 and 3. For Research Question 2, data from the second round of interviews with the teachers and classroom observation data was considered. For Research Question 3, the questionnaires and interview with students were triangulated. Extracts from interviews were selected based on how much particular answers were considered to address the question and how

one specific answer related to others to provide a more comprehensive picture of the point discussed. The full interview with T5 is provided in Appendix J (p. 243) as a sample to show answers in the context of the whole interview conversation.

This chapter firstly provides some information about the research setting regarding the school, the teachers and the students. Then, it presents the results of the present study in the light of the key research questions mentioned above.

4.2 Research Setting

4.2.1 The school

The current study was conducted in one state, all-male high school in a city in Saudi Arabia. For the purpose of ensuring anonymity, the case study school's name has been anonymised. This city is located in the eastern part of Saudi Arabia and the school has among the staff seven teachers who have received in-service formal teacher training on using cooperative learning. The school is located in a governmental building and its staff consists of a principal, or the head of the school, four senior staff members and two student academic advisors and 37 teachers. These 37 teachers teach different subjects, such as English Language, Arabic Language, religious, physics, chemistry, mathematics, biology, history and sports. There are currently 17 classes (six classes for Year 10, six classes for Year 11 and five classes for Year 12), one library, one laboratory and one football ground. The number of students in the second term of 2015 was 562, who are in Years 10, 11 and 12 at the high school (ages 16-18) which, according to the school principal, are divided into mixed-ability classes.

4.2.2 The teachers

Eight male high school teachers were involved in the present study. For the purpose of anonymity, the teachers' names have been removed and a code allocated to them. Participant-teachers are thus referred to as T1, T2, T3, T4, T5, T6, T7 and T8 (Table 4.1).

Table 4.1: Overview of participant-teachers using CL

The teacher	The subject taught	Lessons attended	Teaching experience	Age	Number of lessons per week	Teacher's degree
T1	English Language	Year 12	7 years	31	20	Bachelor
T2	Mathematics	Year 12	6 years	30	22	Bachelor
T3	Chemistry	Year 12	13 years	37	22	Bachelor
T4	Chemistry	Year 11	16 years	40	22	Bachelor
T5	Mathematics	Year 11	7 years	30	21	Bachelor
T6	Biology	Year 10	15 years	39	20	Bachelor
T7	Arabic Language	Year 10	13 years	37	23	Bachelor
T8	Mathematics	Year 10	7 years	32	21	Bachelor

All the information in the table above is based on the teachers' individual interviews, which took place in September 2015. Although the participants teach different grades in different classes, one class from each grade was selected where the majority of the teachers who use cooperative learning taught (Table 4.2).

Table 4.2: Classes taught by teachers using CL

The class	The teachers who taught this class
Year 10	T6/ T7 /T8
Year 11	T4 / T5
Year 12	T1/ T2 / T3

Six teachers (T1, T2, T3, T4, T5 and T6) attended the full in-service formal teacher training on using cooperative learning that was provided by the Local Department of Education, based on Johnson and Johnson's model of using cooperative learning (Johnson et al., 2008) (see Section 2.4.2, pp. 43-44). T7 attended part of the training programme and he received some classroom visits from the trainer and the expert teachers relating to the use of cooperative learning because he was studying for a Master's degree (Section 4.3.1, pp. 120-121). However, T8 did not attend the training programme at all and he did not receive any visits from the trainer or the expert teachers. He heard about cooperative learning from his colleagues who had attended the CL training programme, and used his

school break times to discuss various aspects of cooperative learning with his colleagues. When he encountered a difficult issue, he usually asked his experienced colleagues who had attended the training programme about it (Section 4.3.1, pp. 120-121). Seven of the teachers have been using cooperative learning for approximately one and a half years, whilst T8 has been using it for only one year.

The three lecture-style lessons attended were delivered to each of the three classes investigated (Years 10, 11 and 12) (Table 4.3).

Table 4.3: Classes taught by teachers using lecture-style

Teacher	The subject taught	Lesson attended	Teaching experience	Age	Number of lessons per week	Teacher's degree
T9	English Language	Year 10	15 years	39	20	Bachelor
T10	Arabic Language	Year 11	17 years	41	21	Bachelor
T11	Biology	Year 12	11 years	35	22	Bachelor

4.2.3 The students

In total, there were 97 male students involved in the present study in the three classes where cooperative learning was used by teachers for some subjects: 37 students were in the Year 10 class (age 16) and were taught by teachers T6, T7 and T8; 32 students were in the Year 11 class (age 17) and were taught by teachers T4 and T5; and 28 students were in the Year 12 class (age 18) and were taught by teachers T1, T2 and T3. When the data was collected, students in Year 10 were being taught three subjects by CL, maths, biology and Arabic. In Year 11, students were being taught chemistry and maths by CL, whereas in Year 12 CL lessons were being given in maths, English and chemistry. Other subjects studied in these three classes were taught by other teachers by using lecturing methods.

In Year 10, the students had been taught by CL for less than one semester. In Year 11, 87.1% (27 students) had been taught by cooperative learning for one year, with some new students who had different previous experiences with CL joining the groups. In Year 12, 23 students (82.1%) had been taught using CL for one and a half years, while 17.9% (five students) had been taught using CL for just one year (Table 4.4). This data comes from students' questionnaires (Appendix G, p. 231).

Table 4.4: Number of students taught by cooperative learning by period of time

Year	Less than one semester	One semester	One year	One and a half years	Total
Year 10	33 (100%)	0 (0%)	0 (0%)	0 (0%)	33 (100%)
Year 11	1 (3.2%)	3 (9.7%)	27 (87.1%)	0 (0%)	31 (100%)
Year 12	0 (0%)	0 (0%)	5 (17.9%)	23 (82.1%)	28 (100%)

All these CL classes were considered to be mixed-ability classes. It seems that most of the students in the three years were high-achieving students since a high percentage in each year scored between 80 and 100 in the 2014 academic year general grade (Table 4. 5), which in the Saudi system consists of the average marks of all subjects. This data comes from students' questionnaires (Appendix G, p. 231).

Table 4.5: The previous year's grades

Grade	0 - 49	50 - 64	65 - 79	80 - 89	90 - 100	Total
Year 10	0 (0%)	2 (6.1%)	3 (9.1%)	11 (33.3%)	17 (51.5%)	33 (100%)
Year 11	0 (0%)	0 (0%)	5 (16.1%)	7 (22.6%)	19 (61.3%)	31 (100%)
Year 12	1 (3.6%)	0 (0%)	4 (14.3%)	8 (28.6%)	15 (53.6%)	28 (100%)

The findings presented in Section 4.5 (p. 153) come from students' questionnaires and interviews. From the 97 student participants, 95 answered the questionnaire; however, only 92 were considered in the data analysis. Three of the questionnaires were incomplete and were therefore excluded from consideration (Table 4.6). For the interviews, three students from each year were selected (Section 3.7.1, p. 98): S1-S3 from Year 10; S4-S6 from Year 11; and S7-S9 from Year 12.

Table 4.6: Number of valid questionnaires per year

Grade	Year 10	Year 11	Year 12	Total
The number of students	33 (35.9%)	31 (33.7%)	28 (30.4%)	92 (100%)

4.3 Research Question 1

What are the perceptions of cooperative learning by participant-teachers who received training on it?

In order to answer Research Question 1, individual semi-structured interviews (Appendix E, p. 227) were conducted over five days, between the 6th and 10th September 2015, in the school premises with eight teachers, focusing on the main themes emerging from the deductive analysis (Section 3.9.1, pp. 106-109). This question focused on participant-teachers' perceptions of the teacher training they have received, their own definitions of CL and knowledge acquisition, perceived teachers' and students' roles, and what they consider factors affecting the use of CL. For clarity of discussion, these factors were divided into those considered as challenges and those that support the use of CL. This was followed by a discussion of the advantages and disadvantages of implementing CL in their teaching. In addition, one sub-theme emerged from the inductive analysis, which referred to teachers' and students' responsibilities and authority. This sub-theme is seen here to be closely related to the teachers' and students' roles pre-determined theme and was thus incorporated into it (Section 4.3.3, p. 125).

4.3.1 Perceptions of teacher training

When asked about their perceptions of the teacher training they had received before the CL training, interviewees all focused their answers on the kind of teaching method they were trained to use at university. All of them indicated that the teaching method that they mainly relied on before attending the CL training programme was the lecturing method. For example, T4 said, *"I only relied on lecturing, and I used to write the main points on the whiteboard"*. Similarly, T5 mentioned that *"I used lecture method because I had no idea about another teaching method"*. When the teachers were asked about the reasons behind that, they pointed to the lack of information and insufficiency of both pre-service training and continuing professional development (CPD) training on cooperative learning before attending the CL training programme. For example, T2 said, *"At the university I was taught through traditional lecturing. That was the only method I had learned"*. Similarly, T6 commented that *"I never received any training to use teaching methods and was always taught by traditional lecturing"*. In addition, four teachers (T1, T2, T3 and T7) argued that the Teaching Methods module that they attended at university was not useful and the lecturer focused on the theoretical aspects more than on practical ones. T3 commented that,

“The Teaching Methods module was taught by using lecture-style and delivered in a theoretical form without any real practice, and cooperative learning was not among those methods”, while T7 explained that “The practical part in the pre-service training was not enough. In the final term at the university, I just taught two lessons in one school as teacher training”.

In contrast, the other four teachers (T4, T5, T6 and T8) did not study the Teaching Methods module at all as part of their university programme since they followed the academic path instead of the education one (Section 1.4.2, p. 16). For instance, T8 said, *“They did not teach us anything about teaching methods. I did not know anything about cooperative learning after graduating from the university”.* Similarly, T6 mentioned that *“there were no special programmes or informative courses to raise our awareness about different teaching methods”.* Moreover, according to the teachers, in-service training (formal CPD) that had been established by the Local Department of Education was not beneficial, except for the training on cooperative learning. T3 and T5 claimed that the in-service training subjects did not concentrate on teaching methods such as cooperative learning. For example, T5 commented that such courses *“were much related to technical aspects rather than teaching methods, such as computer skills and school management. But none of them targeted teaching methods in particular”.* In addition, all teachers argued that the in-service training programme generally focused on theoretical aspects of teaching more than on practical ones, which, in their opinion, tends to make these programmes less useful. For example, T4 commented that *“I attend some training programmes, but they are hardly advantageous”.* Likewise, T8 explained why teaching practice was important to teachers when he said that *“the practical component beside the theoretical one can play an essential role to help teachers to understand and correctly implement new teaching methods”.*

As for participant-teachers’ perceptions about training on cooperative learning (CPD), the interviews indicated that six teachers (T1, T2, T3, T4, T5 and T6) had attended the full current in-service training programme (formal CPD) on cooperative learning that had been established by the Local Department of Education, (see Section 1.4.5, pp. 23-27). However, T7 did not attend the full training programme and he explained that *“I attended the first training programme that was run for three days but unfortunately I could not attend another training programme and some expert teachers’ visits because I was studying for my Master’s degree and was quite busy”.* T8 did not attend the training

programme at all and he said, *“I never attended a training programme or course on CL before. However, I heard about this method from my colleagues who had attended a training programme on it”*.

In general, all teachers positively reflected on the training programme they had received. In addition, they indicated the new matters that they benefited and learned through formal CPD in different ways. Both T1 and T7 pointed out that the training programme provided them with the information and knowledge that they needed to implement cooperative learning. T1 commented that,

The CL training gave me information and proper understanding of the main factors of cooperative learning such as teaching students social skills. I have now a clear picture about the concept of cooperative learning. I did not have this knowledge before the training but now I can use it.

In addition, T5 talks about how the training programme changed his beliefs regarding the previous concept of cooperative learning he had had before the training programme. He said before attending the CL training, he *“thought cooperative learning was only about setting group work”*. The CL training seems to have changed his perspective and given him a *“clear idea of the concept of cooperative learning and its important factors”*, especially in relation to how *“all students in a group should be connected with each other so they believe that they win together or lose together”*.

T2 also seems to have changed his views of CL due to the training, stating that it changed his beliefs regarding *“how students could effectively learn. It is not to transfer knowledge to students but how students seek and learn the information by themselves”*. Moreover, T6 mentioned that the training programme changed his beliefs regarding the role of students and teachers. He now argues that, *“the knowledge should not be transferred to students but students should expend effort.”*

The data above seems to indicate that the CL in-service formal teacher training received has been crucial in leading to a change in perspective among all the interviewees. This influence happened at both the formal and informal levels since T8 did not attend the training sessions (formal CPD) at all but still seems to have been indirectly affected by the training programme through the collaborative support received from his colleagues who did attend the sessions. He expressed that,

I took advantage of some break times at school and discussed with my colleagues some issues about cooperative learning such as the criteria and the methods of dividing students into groups in the classroom....We have expert teachers in cooperative learning.... When I encounter a difficult issue, I have usually asked about it from my experienced colleagues, who had attended the training programme.

The interviews provided the teachers with the chance to express their views regarding the strengths and the weaknesses of the training programme. The main strength that all teachers who attended the training programme agreed on was the practical aspect of the training in addition to the theoretical one, which contrasts with the traditional training they had received before, as mentioned above. As an example, T2 said that this practical component “*was very important so that the teacher learns how to use it with his students in the classroom*”. One important aspect mentioned by the same teacher is that while being trained in pursuing CL “*the programme instructor applied cooperative learning*” with the trainee teachers themselves so they could actually experience it from the learners’ point of view.

However, the teachers also indicated some weaknesses of the training programme. Six teachers (T1, T4, T5, T6, T7 and T8) indicated that the timing of the training programme was the main problem for them. T6 commented that running it in the evening was a drawback due to family responsibilities and commitments. This problem prevented T8 from attending the training programme. Another drawback was mentioned by T5 regarding the instructor training. He said, “*Sometimes the instructor’s specialisation is Arabic Language, while I am a maths teacher. In this case, it is not possible for him to give examples from maths*”. Moreover, T7 indicated another problem, which was related to external school visits. He commented that,

We visited some teachers who use cooperative learning in the primary level, while we are high school teachers. This means the strategies of cooperative learning application are different due to the difference between students’ levels.....The level of students and curricula were different, and accordingly the strategies would be different.

The comments above seem to generally indicate considerable differences between the traditional training participant-teachers had received before and the CL training provided and considered in this study. In general, interviewees seemed to have a more positive and clear perception of the CL, which was greatly due to the training received.

4.3.2 Perceptions about CL definition and knowledge acquisition

As seen above, it seems that their understanding of the concept of cooperative learning has changed for all teachers. T1, T2 and T5 stated that before attending the training programme they believed CL was only related to group work. For example, T1 said, *“I had a basic understanding of its meaning. I knew it is about a group of students getting together to study a piece of information”*. Similarly, T2 commented that,

I only knew that, instead of the students sitting in rows, they sit in circles. Yet, I did not know the key factors of cooperative learning that lead it to be successful. Also, the criteria that should be considered by teachers to form the groups and select their members were not clear to me.

Moreover, interviews revealed that five of the teachers did not have any idea about cooperative learning before either attending the training programme or having experience with it, as it was the case of T8. T6 mentioned that, *“I hardly knew anything about it, and I never heard that term being used before.”* After the training programme and having had some experience of using it, the understanding of the concept of CL among all teachers seems to have changed to a certain degree. The teachers indicated that now they understand that CL requires learners to work together to complete their tasks and achieve their goals. In addition, their definitions included some key components of implementing cooperative learning (Johnson & Johnson, 2014). For example, T5 described cooperative learning as follows:

My understanding of cooperative learning has now differed from the past. Now, I see cooperative learning as groups of students of different abilities who have a common objective to achieve through the accomplishment of a given task provided by the teacher. The group attempts to accomplish that task based on the assigning of a particular role to each member and cooperation among the group members. This work is achieved with consideration of a number of social skills in a way that facilitates the attainment of the group’s objective.

From T5’s definition, some key components of cooperative learning appear. For instance, when T5 mentions *“a common objective”* he seems to refer to attaining the same aim; *“assigning of a particular role to each member”* points towards individual accountability; *“cooperation among the group members”* relates to positive interdependence; *“social skills”* refers to the importance of this component to organise group work; and *“students of different abilities”* indicates improved knowledge regarding dividing students into groups. Another example comes from T4 when he described cooperative learning:

Now, I see cooperative learning as the formation of students into groups in which they help each other and cooperatively work in order to achieve the shared task and each student in the group has the same level of understanding and knowledge.

T4's definition also seems to refer to some key components of cooperative learning. For instance, when he said, "*help each other and cooperatively work*", he is likely to be referring to positive interdependence; "*the shared task*" relates to attaining the same goal; while "*the same level of understanding and knowledge*" points to learning responsibility.

In addition to the general understanding of what CL is, the training received also seems to have changed participant-teachers' perceptions of the best way for students to acquire knowledge. Apart from T2, all other teachers claimed that they used to believe that students learnt better when the instructional activities were based on the teachers' effort (teacher-centred). T5 commented that,

I used to believe that the more effort and activities the teacher spent and gave to the students, the more knowledge students would get. Therefore, I used to spend more efforts in explaining the lesson and diversify its sources in order that the students got more knowledge.

Likewise, T7 mentioned that he believed that using "*different examples*" and explaining "*the content via all possible methods*" would assist his students to "*understand it more effectively*". The exception was T2, who even before training programme seemed to have believed in the importance of the students' role and participation in acquiring knowledge. However, in spite of his proclaimed belief, this did not seem to have motivated him to change his teaching method before the training. He explained that,

In spite of my conviction on the importance of the student's role and participation in the discussion, I did not know a specific teaching method that helped me to do that. That was what I knew then, and I used the method of lecturing despite my full dissatisfaction with it.

After attending the training programme and having experienced using it with their students, all teachers seem to have changed their perceptions regarding the best way for students to acquire knowledge. They now argue that students learn better when the instructional activities are based on students' effort (student-centred).

4.3.3 Perceptions about classroom roles, responsibility and authority

All the teachers suggested that their perceptions about the teacher's role in the class before using cooperative learning was that *"the teacher's responsibility is to explain and present the new information, while the student's responsibility is passively receive the information and understand it"* (T3). Teachers were also seen as the only ones who had authority in the classroom.

However, after implementing cooperative learning in the class, all the teachers claimed that their perceptions about the teacher's role and responsibility in the class had changed. All the interviewees described their role as facilitators of students' learning instead of presenter or lecturer and their main responsibility was to design tasks for students in the groups, observe and watch their progress as well as evaluate their learning. For instance, T2 explained that, *"my role now is to guide and facilitate the students' learning. I design classroom activities, giving the students the principal role in them. Then, I observe students in the classroom while they cooperatively work on tasks."* T3 also provided more information about the teacher's responsibility when students are working on tasks and added that, *"My responsibility now is to provide any help for students if they ask when they cooperatively work in their groups."*

In addition, all the teachers viewed the students' role as being active participants and they had similar views regarding students' responsibilities in the groups. For instance, T6 described the students' role by indicating that, *"they are now active participants, responsible for their learning and help each other to learn."* T4 explained the students' responsibilities by indicating that, *"students have to understand the material, discuss it with their teammates, synthesise information, and correct their mistakes by themselves. Finally, they choose the best solution to the problem."* T1 commented on how students learnt different skills when they bear responsibility for their learning since *"they play different roles such as the leader, writer, timer and the checker. Also, they learn the presentation skills, thinking critically and social skills"*.

The delegation of some authority to students in the class so that they are in charge of their learning is considered to be an important aspect of cooperative learning. In lecture-style, as mentioned above, teachers alone tend to hold the authority and they do not allow students to freely discuss the work or talk unless they ask them questions. However, in cooperative learning, all the teachers claimed that the students were responsible for their learning and they were free to discuss the work and talk with each other in their groups to

complete the tasks. Therefore, the students held some authority and power. T1 said, *“the teacher shares the authority with the students and provides them with the freedom to be responsible for their learning”*. Seven teachers (T1, T2, T3, T4, T5, T6 and T7) mentioned that the students had the ability to take control of their learning, helping the teachers to manage the class. T5 commented that, *“I feel that I can leave students in the class alone and they can manage to learn with each other and they do not need me.”* However, one teacher (T8) had a different view, and he said that cooperative learning creates a noisy environment when *“students discuss, explain and interact with each other in their groups”*, which he argues could *“lead to disorder and a struggle to keep the classroom under control”*. T8 also commented that this could lead to *“complaints”* from other teachers in classrooms next to where lecture-style lessons are being delivered.

4.3.4 Perceptions of challenges and difficulties affecting CL

Teachers indicated that there are three main challenges and difficulties that seem to affect their use of cooperative learning: administrative factors, students’ backgrounds and initial challenges.

Firstly, all the teachers mentioned some **administrative factors** that could affect their use of cooperative learning. Two teachers (T3 and T8) pointed out that classroom composition could be a challenge: *“if all or the majority of students in the classroom are low achievement students, their interaction will be very weak and they could not help each other to understand the lesson content”* (T3). Another challenge was the large number of students in small classrooms. This was mentioned by seven teachers (except T5), with T4 stating that, *“the large number of students in the classroom, sometimes reaching up to 42 students in small classes, obstructs using cooperative learning in the class because it is difficult for me and students to move in the class.”* In addition, four teachers (T2, T3, T7 and T8) indicated that covering a curriculum that has a heavy load of content and information was another challenge. For instance, T3 commented that, as *“the Ministry of Education requires a certain amount of the content to be taught every day, I sometimes had to return to use lecture-style to quickly cover the curriculum”*. Similarly, T2 said, *“the current syllabus is more perfectly fit to the traditional lecturing method than to this new method as it can accommodate more information and details than cooperative learning”*. Finally, the assessment strategy was also a challenge that some teachers faced when they used cooperative learning. This was indicated by four teachers (T2, T4, T5 and T7). T4 explained that, *“The Ministry of Education teaching regulations enforce us to use assessment where*

students do exams individually. Therefore, any different assessment strategies are not accepted.”

Secondly, seven teachers mentioned that some **students’ backgrounds** could be a challenge that could affect their use of cooperative learning. T5 and T8 pointed out that the quality of some students could be a challenge. T8 said that students *“who tend to be shy and hardly discuss and interact with their peers in the group can impact on the teacher”*. Another challenge was the students’ family background, as indicated by three teachers (T1, T3 and T7). T1 explained that, *“the use of a cooperative method becomes a real challenge for students who come from a family background that does not promote discussion and dialogue, who are not usually given the opportunity to express themselves.”* T2 also mentioned that some students keep their effort to themselves and do not share their information with others and that, *“the families of such students seem to required them be the highest achievers in the classroom and to excel over his peers, discouraging the student from sharing his information with his teammates.”* In addition, seven teachers (T1, T2, T3, T5, T6, T7 and T8) indicated that students’ long experience with lecture-style was a challenge. For instance, T3 commented that, *“this is a big jump for students. This change is not easy and it is considered a challenge to them because of their long term experiences with lecture-style.”* Finally, students’ lack of knowledge and understanding of cooperative learning was another challenge mentioned by four teachers (T2, T3, T7 and T8). T3 said that one student approached him saying that the CL method was *“not useful”*. When T3 enquired about the reason, the student said, *“I do not know how to use it”*. T3 argued that, *“the picture may not be clear to the students, which can affect the teacher’s adoption of a cooperative learning method.”*

Finally, all the teachers mentioned **initial challenges** that teachers could face when they changed their teaching methods from lecture-style to cooperative learning and that this might lead to teachers being resistant to change. Four teachers (T2, T4, T5 and T6) indicated that long experience with lecture-style was a challenge at the beginning. T2 said that for teachers who *“have been using the lecturing method for a long time – some for eight or 10 years – the change to the new method is a real challenge”*. Another challenge was teachers’ conviction of the benefits of the change, as mentioned by five teachers (T1, T2, T3, T4 and T5). As an example, T2 said that, *“teachers should feel that the traditional lecturing method is not effective and they have the wish to change to a new one. In addition, the teachers should believe that the new method will benefit them and students more.”*

Extra workload on teachers was another challenge. Three teachers (T1, T5 and T6) mentioned that attending the training programme constituted extra workload. T6 said, *“It was something new, and we were requested to do extra work, such as attending the training programme, visiting other teachers in the class, and carrying out certain activities inside the classroom. That weighed much on the teachers in general”*. T4 and T7 mentioned extra workload that was connected to the planning and preparation of cooperative learning itself as a new method. T7 said, *“teachers need to spend more time and effort to prepare and plan for cooperative learning lessons, especially at the beginning”*.

Moreover, all participants indicated that other teachers who use lecture-style in the same school negatively affected teachers and students who are new to cooperative learning, especially at the beginning. T5 commented that, *“the comments of teachers who do not use cooperative learning occasionally frustrated me.”* Additionally, T8 said *“students who are not familiar with using cooperative learning at the beginning or at the training stage can get affected and discouraged by teachers who use the traditional lecturing method. This causes confusion among students”*.

In addition, teachers’ fears about delegating responsibility to students to learn on their own was another challenge, which was indicated by three teachers (T3, T5 and T6). T3 said, *“teachers feel that students could not understand the lesson content well because they depend on each other, not on us as teachers”*. Another challenge was teachers’ fears about delegating authority to students who then take control of the class. This was mentioned by three teachers (T1, T3 and T4). T4 commented that, *“it is difficult for teachers new to CL to delegate the control of the classroom to their students as it could lead to disorder.”* Interestingly, this teacher’s view (T4) about classroom management in cooperative learning after practising and experiencing it seems to have changed, as he stated that, *“through cooperative learning, the students are kept busy in the classroom, working on finding solutions to problems, allowing me more time to manage the classroom and evaluate students’ achievement.”* Finally, lack of clarity of cooperative learning strategies and application was an initial challenge mentioned by T8, who had not attended the training programme, who argued that, *“at the beginning, some of its strategies and methods of application were not clear to me.”*

4.3.5 Perceptions of supporting factors affecting CL

Although there are considerable challenges and difficulties, as discussed above, there are also supportive and positive factors that seem to assist teachers to use cooperative learning and help them overcome those challenges and difficulties, especially at the initial stages of using cooperative learning. These are the support received by the school administration and colleagues, external visits, students' training in using CL, lesson planning and preparation, and incentives given to teachers.

First of all, six teachers (T2, T3, T4, T5, T7 and T8) mentioned the direct support they received from the school principal and school administration to use cooperative learning. For instance, T4 mentioned *"the support and encouragement teachers receive from school administration and the school principal."* T2 highlighted indirect support from the school principal when he said, *"the principal's support to use cooperative learning gives me motivation to keep using it"*. Another helpful source of support came from the teachers' colleagues. All participants mentioned that discussion and sharing views with each other regarding cooperative learning was helpful. T3 argued that, *"an environment where issues related to cooperative learning can be discussed encourages me to carry on using this method and support other teachers who do not use it."* In addition, three teachers (T3, T4 and T5) argued that closely working with *"some colleagues who teach the same subject I teach to plan for the next class together"* was useful (T4).

A second important positive factor was the teachers' visits to other schools to observe experienced teachers using CL, which were considered very helpful, especially at the beginning. T5 mentioned that this *"can play an important role in changing the teacher's negative perceptions and strengthening his wish for the change"*. Similarly, T4 said, *"external classroom peer visits were effective for mastering that method [CL]"*. The follow up and visits to teachers' lessons by the training instructor was another support factor that was indicated by seven teachers (except T8). T5 commented that the regular follow-up for over a year helped *"detect any problems arising encountered by trainee teachers and to suggest the best solutions to overcome them"*. Similarly, T7 said that, *"at times when our motivation to change from traditional method to new one decreased and we were tempted to return to using the traditional lecturing method, the training instructor's visits and support renewed our enthusiasm to use CL."*

Another helpful support was students' training on cooperative learning before using it, as mentioned by five teachers (T1, T2, T4, T5 and T6). T1 explained that, *"training the*

students to use cooperative learning and understand its techniques is an important factor.” Furthermore, T6 commented that, *“students are not used to engaging in discussions and exchange of views. So, if they are going to be taught using CL, they will need much training to cope with it.”* Gradually implementing cooperative learning at the beginning was mentioned as a useful aspect by four teachers (T1, T4, T5 and T6). T6 mentioned that, *“gradually introducing cooperative learning is useful especially at the beginning; I increased the number of cooperative learning tasks in the classroom lesson by lesson.”*

Good lesson planning and preparation was another helpful factor mentioned by two teachers (T1 and T3). T1 said that, *“challenges can be overcome by proper preparation and good lesson planning in order to have a good cooperative lesson.”* Moreover, two teachers (T3 and T5) indicated the importance of incentives to encourage teachers to change their teaching methods and implementing cooperative learning. When asked what sort of incentives, T3 commented that,

I mean all kinds of incentives, material and moral, must be some form of flexibility with teachers who use the cooperative learning method, such as freeing them up from covering an absent teacher's class and reducing the number of classes they have to teach in a week.

4.3.6 Perceptions about the advantages of implementing CL

One of the most important advantages pointed out by all the teachers is the enjoyment they take from teaching using cooperative learning. T5 observed that, *“learning became more enjoyable and fun”* in contrast with the lecture-style that he believed was responsible for the *“boring”* atmosphere in class. T7 also mentioned the fun aspect of CL and stated that, *“the source of joy”* is possibly because students *“actively engage in discussions and this creates a more relaxed atmosphere”*. Another reason for such enjoyment is provided by T1, who believes that this is due to the fact that in CL *“students are not passive as in traditional teaching methods”*. T6 also believes the main reason for an enjoyable atmosphere is that students participate in the lesson instead of having the *“teacher talking throughout the entire class”*. T4 argued that CL is a *“more pleasing method”* because it is *“more effective and brings more benefits to students than the lecture-style lesson”*.

All the teachers indicated that students could academically and socially benefit from using cooperative learning. One of the most important **academic benefits** mentioned was motivation. All the teachers mentioned that cooperative learning enhances students' motivation to learn. T3 explained that, *“students in the group encourage each other to work*

together in order to achieve mutual goals. These shared goals motivate students to work and learn.” Similarly, T4 said, “When students have opportunity and bear the responsibility, productivity is increased. At the same time, they receive support from their teammates and the teacher to achieve the shared goal”.

Another advantage, promoting students’ autonomy and responsibility, was indicated by four teachers (T1, T4, T5 and T7). T1 said that, *“some students told me that they prepared for the lesson in advance in their homes in order to maintain the group’s academic level. This proves that students have developed a sense of autonomy and responsibility undertaking.”* Similarly, T7 commented that, *“students get used to being responsible for their learning. However, if the teacher is responsible for all the input, students’ sense of responsibility decreases.”* Developing students’ thinking skills was another benefit that was mentioned by six teachers (T1, T2, T4, T5, T6 and T7). T6 explained that, *“all CL activities involve high skills of thinking, unlike the traditional method where students passively receive the information.”*

Students’ retention of information was also indicated as an academic advantage by six teachers (T2, T3, T4, T5, T6 and T7). For instance, T3 commented that, *“cooperative learning helps students recall and retain information in their memory. Conversely, in the lecturing method, students are not sure of their proper understanding of the information, given that they did not play a role in searching and drawing it.”* Similarly, T5 said, *“Using these thinking skills can also help to promote students’ retention”.* Five teachers (T1, T2, T3, T7 and T8) indicated that students’ understanding of lesson content when cooperative learning is used is better than when lecture-style is used. T7 commented that, *“when some students work in a group, they can check the understanding of the task or lesson content with each other.”* T7 argued that, in contrast, *“in the lecturing method, information may not be clear, since students receive it from the teacher without spending effort, sometimes without fully grasping it.”*

Finally, five teachers (T1, T2, T3, T5 and T8) mentioned that students’ increased academic achievement was another benefit of CL. T5 commented that, *“When using the method of traditional lecturing, only six to eight students out of 30 may get high marks. However, with the cooperative learning method, you find only about three to five students whose marks are just within average, but the rest of the students have gained high marks.”* Similarly, T2 said, *“it is very likely that students’ grades get higher since they do understand and digest information more effectively”.*

In addition to the academic benefits discussed above, all the teachers mentioned that cooperative learning brings **social benefits** as it enhances students' learning enjoyment. T1 explained that, *"students enjoy working with each other and they are active not passive as in the traditional teaching method."* Another advantage was reducing students' anxiety, which was mentioned by five teachers (T1, T4, T5, T6 and T7). T5 explained that,

In the traditional method, some students are very worried about making a mistake especially when they are asked by the teacher. However, cooperative learning helps reduce anxiety among students. This is because a student in the group discusses problems with his group members and confirms the validity of the solution, or at worst the answer is the work of the group as a whole but not his own. This indeed has reduced students' worry in the class.

Increasing students' self-confidence was another benefit that was mentioned by six teachers (T1, T2, T3, T4, T7 and T8). For instance, T4 explained that, *"students working with CL gain confidence in the validity of information they have arrived at in cooperation with their teammates."* T7 also said that, *"CL students do not rely on the teacher to understand the lesson content but they rely on themselves to search and discover the information."* Such reliance seems to favour the formation of positive relations among students. T5 commented that, *"the teacher in cooperative learning encourages the student to hold a discussion with his teammates. This has helped to build up positive relations among students."*

In addition, T4 and T5 indicated that cooperative learning helps to form positive relations between the teacher and his students. T4 said, *"the relationship with the teacher and interaction with him are marked with friendship and cooperation, due to his different role in the classroom"*. Similarly, T5 commented, *"the teacher sometimes sits with students and talks to the group as a member of it. This creates a good relationship between students and their teachers. In the traditional lecturing method, there is no chance for this to happen"*.

Finally, six teachers (T1, T2, T4, T5, T7 and T8) mentioned that cooperative learning helps students to learn some social and communication skills. As an example, T5 commented that, *"having gained the skill of careful listening, they can use it inside and outside the classroom when communicating with people, friends and family members."* A similar view was expressed by T1, who said that, *"students have become more polite. Students now show appreciation to the teacher and their peers when they get help from them, contrary to their habits in the past."*

4.3.7 Perceptions about the disadvantages of implementing CL

All the teachers mentioned some drawbacks of using cooperative learning, and they all indicated that free-riding was the main disadvantage. T8 explained that free-riding *“often arises from some students who do not want to get involved in group discussion, usually the one who likes to receive information without making much of an effort”*. Six teachers commented on possible solutions to this problem. Four teachers (T1, T2, T4 and T5) suggested randomly selecting a student to present his group’s answer. T5 said, *“I address this problem by making a random selection of the student who gives the answer on behalf of the group”*. T3 and T6 suggested a similar solution by *“discussing the problem with them and moving these students into another group in order to solve this problem”* (T6). However, T7 and T8 did not mention any solution to this problem. T7 said, *“Cooperative learning has a main problem that is too hard to resolve. This problem is 'free-riding’”*.

Another disadvantage was that the teachers spend more time and effort planning and preparing for a CL lesson more than for a lecture-style one. This was already mentioned as an initial challenge for teachers new to CL; however, lesson planning and preparation seems to still be an issue in the long term, as indicated by three teachers (T2, T3 and T4). T4 mentioned that, *“CL requires teachers to spend effort and sufficient time to prepare and plan for the cooperative lesson in comparison with the traditional method in order to have a good cooperative learning class.”* Similarly, T2 said, *“the majority of the teachers have to attend 22 classes every week and this makes it difficult to implement cooperative learning because the planning and the preparing for cooperative learning is harder than for lecture-style and they require more time and effort”*. T3 suggested that one way of helping to reduce this problem is to also reduce the number of classes each teacher has to teach every week. Participants usually teach more than 20 hours a week, reducing this number to *“about 16 hours would help to reduce the effort and time spent on planning”*.

Finally, four teachers (T1, T4, T6 and T7) argued that students’ absence was another disadvantage of using cooperative learning. For instance, T6 commented that, *“when I assign different roles and one student of this group is absent, others have to play two roles, so this leads to problems.”* Contrary to the other drawbacks above, none of the participants were able to offer any possible solutions for this problem.

4.4 Research Question 2

Which teaching practices do participant-teachers currently employ when facilitating cooperative learning work in the classroom?

In order to answer Research Question 2, the second individual semi-structured interviews (Appendix E, p. 227) were conducted over four days, between the 25th and 28th October 2015 in the school premises with eight teachers. In addition, each teacher using CL was observed six times over a period of 39 days, between the 13th September and 21th October 2015 (one observation for each teacher every week) (Appendix H, p. 237). The focus of the interviews and classroom observations was on the main themes emerging from deductive analysis and which are related to Research Question 2 (Section 3.9.1, pp. 106-109). This involved aspects related to the lesson plan, group composition, implementing the CL principles, monitoring, rewards, assessment and evaluation. Furthermore, two themes were identified through the inductive analysis (arranging the classroom and explaining the tasks, and students' behaviours in group work) and they are also discussed in this section. The data from interviews and classroom observations was triangulated in order to present a collective answer to this research question. In addition to the cooperative learning observations, three teachers using lecture-style were observed after the CL observations. There was one observed lesson for each of the three year classes (Years 10, 11 and 12) between the 3rd and 4th November 2015.

4.4.1 Lesson plan

The first aspect to be considered was how teachers plan their CL lessons. Seven teachers (T1, T2, T3, T4, T5, T6 and T7) indicated that they consider academic and social objectives in preparing and planning for a cooperative learning lesson. For instance, T4 said *“I identify the lesson’s academic aims and objectives and the specific criterion for achieving those objectives.....I also prepare what social skills students need in that class”*. This was confirmed by classroom observation of these teachers. For example, in T6’s class the lesson topic was animal characteristics. The teacher divided the whiteboard into two parts. Academic objectives were written on right side, which was to know general animal features and to know how animals feed and digest. Social objectives were written on the left side, such as careful listening to each other, taking turns to talk, having a low voice when speaking, thanking and agreeing with teammates. Before students worked on tasks, the

teacher reminded them of the social and academic objectives that were written on the whiteboard (T6 - Observation 6).

T3 commented on how lesson objectives were different from lecture-style to cooperative learning: *“with the lecturing method, my main focus was placed on the academic objectives of the lesson...Now, with the cooperative learning method, I consider academic and social objectives at the same time”*. However, even using cooperative learning, T8 just focused on academic objectives of the lesson in his lesson plan. He stated that *“the lesson’s topic comprises a number of academic objectives. I divide them into tasks and questions which I write on the whiteboard”*. This was confirmed by all classroom observations of T8. For example, in one of T8’s lessons the topic was classifying triangles. T8 wrote some questions on the whiteboard, which were related to the academic objectives of the lesson, such as *“What are the acute triangle, obtuse triangle and right triangle?”* He did not write down or mention any social objectives. Before and while students worked on the tasks, the teacher just focused on academic objectives (T8 - Observation 5).

After determining the lesson objectives, all the teachers followed the same method of designing lesson tasks. For instance, T3 explained that his planning was divided into stages that consisted of identifying *“key ideas and main objectives”*, organising these ideas *“in the form of tasks that take a form of questions or problems that require students to work on together”* and preparing *“the textbook material that can help group members to complete the tasks”*.

Three teachers (T2, T4 and T5) emphasised the importance of the balance between task time and class time available to cover all the tasks in the lesson plan. For instance, T5 said that *“I try to make a balance between how many minutes group members need to finish the task and class time in order to cover all tasks”*.

All the teachers claimed that they used CL when teaching different topics in the syllabus in every lesson. However, they did not use it throughout the whole lesson period. For example, T7 said that *“Yes, I use cooperative learning in each lesson but not through the entire class; the traditional lecture method is used in the lesson presentation as well”*.

All the teachers indicated two factors that prevented them from using cooperative learning for the entire class. Firstly, they mentioned the relation between students’ abilities and the difficulty of some lesson contents. T2 said,

I usually plan to use the lecturing method for the part of the lesson where I think it is difficult for students to learn by themselves and cooperative learning for the other parts of the lesson where I think students are able to learn on their own.

Another factor indicated by five teachers (T2, T3, T6, T7 and T8) was the number of lesson objectives and amount of content that should be covered in the time available in one lesson. For example, T6 commented,

Some lessons have a lot of learning objectives and, if I design tasks based on all these objectives, the lesson time will not be enough to do all these tasks. This is because each task requires group members to read, think, discuss with their teammates, evaluating groups' understanding of the task.....Therefore, I use both cooperative learning and traditional method in one class. Some lesson objectives are presented by lecturing method and others by cooperative learning.

This was confirmed by all classroom observation of all the teachers, when the total amount of lesson time assigned to cooperative activities was observed (Table 4.7 below).

Table 4.7: Lesson time assigned for teaching activity by teacher

Teachers	Number of lessons	Cooperative activities		Whole group teaching	
		Average minutes	Average percentage	Average minutes	Average percentage
T1	6	26	58%	19	42%
T2	6	24	53%	21	47%
T3	6	26	58%	19	42%
T4	6	27	60%	18	40%
T5	6	25	56%	20	44%
T6	6	25	56%	20	44%
T7	6	24	53%	21	47%
T8	6	23	51%	22	49%
Total	48	25	56%	20	44%

Teachers used on average 56% (25 minutes) of class time for cooperative learning activities and 44% (20 minutes) of class time for whole group teaching. This whole group teaching was used to introduce new topics, to explain some parts of the lesson, and to summarise the whole lesson contents before the lesson finished. In the following example from T8's classes, the lesson topic was angles and parallel lines. The teacher explained

mathematical laws by using lecture-style and then asked students to carry out exercises on these laws by using CL (T8 - Observation 1). When T8 was asked about the reason for this, he said that,

[m]athematical laws and terminology can be difficult to understand so I present and explain them by using the lecturing method because students are not able to learn them on their own. I leave them doing the exercises and discussing the methods to solve the maths problems by working cooperatively in the groups.

4.4.2 Group composition

Teachers made pre-instructional decisions regarding students' group composition. In terms of group size, all teachers indicated that they “assign few students in a group, either two or four.....Dividing students into groups of five or more is not possible” (T5). Teachers mentioned different reasons why they consider small groups better than large groups. Four teachers (T3, T5, T6 and T7) indicated that large groups affect teachers' classroom management. For example, T3 said,

The fewer the number of students in the group, the more efficient the teacher's management of it and monitoring of its work would be, and vice versa. Large numbers of students in the groups may even result in the teacher losing control over groups.

Three teachers (T1, T4 and T8) argued that “the more students in a group, the less concentration and more free-riding there would be. For this reason, I usually divided the class into groups of two or four” (T1). T2, however, presented a different reason when he said that “in the small groups, structuring group members' discussion is easier and clearer for them and group members' responsibility undertaking is greater compared to that in groups with a larger number of group members”.

Classroom observations showed that teachers who taught Year 10 sometimes used groups of two students and sometimes groups of four. However, teachers who taught Years 11 and 12 usually set groups of four students. When teachers who taught Year 10 (T6, T7 and T8) were asked about that, one said,

I assign two students in a group, when students are new to cooperative learning. This is easier to enhance positive interdependence between them and make them responsible to learn their part of the lesson content. In addition, it is easier to observe their commitment to participate in group discussion. When students become familiar with cooperative learning, I increase the number of students in the group to four (T6).

All teachers mentioned that they create heterogeneous groups in terms of students' academic levels as the main criterion when assigning students in groups. For instance, T4 explained that,

I must consider the individual academic variations among students in the group...When the levels of all the students in a group are low, they may fail to accomplish their task. The presence of an excellent student helps to promote discussion and exchange of views among students in order to achieve the task.

In addition, all teachers believed that both high-achieving students and low-achieving students benefit from cooperative learning. For example, T2 explained that “*a weak student learns from an excellent student's help and explanation...As for the stronger group member, his discussion with the less-distinguished student in the group helps him to revise the information and ground it in his mind*”.

In addition, all teachers mentioned that they assign roles such as leader, timer, checker and presenter or summariser to students in the group. As an example, T8 said, “*assigning roles promotes responsibility bearing among students and helps organise the group's work. It also encourages group members to depend on each other so that they do not work individually*”. However, the findings of the teacher classroom observations showed that just six teachers assigned roles to their students in all their lessons. Although T3 said he assigned roles to his students, this was not observed in his classroom observations. When he was asked about that, he commented,

At the beginning, I used to assign roles to students when they were in Year 11. However, they are now in Year 12 and therefore they have got familiar with the cooperative learning method; they manage to do the tasks without those roles (T3).

In addition, T5 mentioned that he used students' roles in his classes but it was observed that he used them in some classes but not in others. When he was questioned about that, he said that “*sometimes I feel that the students now have the ability to organise and coordinate the group's work without these roles, so sometimes I do not use them*”.

4.4.3 Arranging the classroom and explaining the tasks

One of the themes emerging from the inductive data was the classroom seating arrangement, which is also closely related to the grouping. All teachers indicated that students should sit face-to-face in the groups “*because this helps them to interact, communicate and discuss the information with each other. It also helps to practise social*

skills” (T6). T4 added that “*it also creates good relationship among students*”, while T5 mentioned that “*dividing students in the groups allows for a pathway for me to observe and watch group members’ work and interaction*”.

In 30 out of the 48 lessons observed, teachers and students had to spend about two to three minutes rearranging the desks and chairs from rows into island formation because the previous lesson was delivered as a lecture, which required students to face the board and the teacher in a conventional seating arrangement. Students’ desks had to be put into a different layout more suitable for cooperative learning. When the teachers were asked about that, they all mentioned the same reason. For example, T3 said,

the problem is that, when the teacher before me was using the traditional method, I find the desks in a row layout. Due to that, I take time to shift them into the group layout. However, if the previous teacher used CL, the desks would be already set in a group layout and that would save time.

T8 commented that how changing the classroom layout from lecture-style to cooperative learning groups affects students positively. He mentioned that,

arranging classrooms in a cooperative learning layout has helped to motivate students who often sit in the back rows in the traditional method. These students are usually weak students. They often take considerable effort from me to motivate them to focus on the lesson and help them to understand it. In cooperative learning, these rows do not exist and students in the back have become active members in the groups.

Another emerging theme was the way teachers explain task in CL lessons. All teachers mentioned that setting tasks without explaining them negatively affects students’ working in the groups. For instance, T1 indicated that “*students still need to understand the nature of the task and how they can do it. If it is unclear for students how they do the tasks, their interaction and working will be bad*”. Similarly, T2 said “*giving the task to group members without clarification of its nature and strategy of cooperatively working on it is unfeasible*”.

Classroom observations provided evidence that the teachers not only explained the tasks but also set the criteria for acceptable work. This usually centred on correctly answering the task question. For example, in T1’s English Language classes the topic was describing a past event. Before students engaged in the task, the teacher explained it and gave detailed instructions for its completion. He also established that, in order to successfully complete it, students had to explain and discuss their answers with their

teammates and make sure each group member understood the answers for all the sentences (T1- Observation 4).

4.4.4 Implementing the principles of CL

When asked about which of the core CL principles (positive interdependence, individual accountability, promotive interaction, social skills instruction and group processing) (Johnson & Johnson, 2014) they implemented in their lessons, six teachers (T1, T2, T3, T4, T5 and T6) said they considered all the five principles of cooperative learning in their classroom instruction. However, T7 considered only four principles in his classroom instruction, omitting the group processing principle. T8 considered just three principles in his classroom instruction, omitting group processing and social skills instruction. A point to remember is that T7 only attended part of the CL training and T8 did not receive the in-service formal teacher training but was mentored by his colleagues in using CL.

In terms of **positive interdependence** (Johnson & Johnson, 2014), all the teachers considered it in their classes and the ways of promoting this principle were similar. For example, T3 said, *“students have to help and rely on each other to complete the given task and understand the answer to the task-related question”*. He believed that this can be promoted among group members by *“assigning different roles to group members”* and each student *“gets a share of the task and information different from those of his teammates, which obliges him to rely on them in order to understand the whole content”*.

In addition, all the teachers considered **individual accountability** (Johnson & Johnson, 2014) in their classes but the ways of promoting this principle were slightly different among them. The six teachers who attended the formal CPD (T1, T2, T3, T4, T5 and T6) indicated that they structured individual accountability in the same ways. As an example, T5 said that *“every group member should bear the responsibility to learn his share of the material and the task and assist his teammates to learn it”*. This is done by *“explaining to group members their responsibilities to complete their task”*. Another way is to let students know that *“there will be a random selection of a member from any group to present his team’s answer”*. T5 argues that, by using random selection, *“every member in the group is likely to spend his effort to learn his part and learn his teammates’ part of the task”*. However, T7 and T8 just used explaining the responsibilities to students without randomly selecting a member of the group to present his group’s answers. T8 mentioned that *“I clearly explained each group member’s responsibility in achieving the task”*.

In terms of **promotive interaction** (Johnson & Johnson, 2014), all teachers considered it in their classes and the way of promoting it was similar. For instance, T6 believed that *“enhancing discussion and explanation among group members is important because it helps them to learn lesson content by achieving the tasks”*. He argued that the best way of promoting interaction was *“verbal reinforcement: so during the lesson time inform groups members so they know they are expected to talk and discuss together their understanding of the content”*.

All teachers apart from T8 considered **social skills instruction** (Johnson & Johnson, 2014) in their classes and the way of promoting it was similar. As an illustration, T1 mentioned that,

I teach students social skills because I think they need them in their work with their teammates. I do that when students are new to cooperative learning. If students have an experience with using cooperative learning, I will just write these social skills on the whiteboard to remind them.

All the teachers except T7 and T8 considered **group processing** (Johnson & Johnson, 2014) in their classes and the way of promoting it were similar. For example, T4 said this principle was important to *“improve team functioning”*. He said that before the end of each lesson he asked each group to *“review their work in that lesson and determine two actions that helped them to achieve the tasks and which group members would like to continue using in the future”* as well as *“two unhelpful actions did not help them to effectively achieve the tasks and which they would avoid in the future”*.

The findings of the teachers’ interviews were confirmed by the classroom observations, which consisted of six lessons being observed for each teacher. Using the classroom observation sheet (Appendix H, p. 237), the researcher took notes on the tasks and activities taking place in the lesson that matched the ways of promoting the five principles of cooperative learning (Section 3.8.2, pp. 105-106). Whenever teachers used one or more techniques to promote those principles during a lesson, a tick was put against the relevant principle. It can be seen from Table 4.8 that in most lessons teachers used strategies (Table 4.9 below, p. 144) to promote the five principles at certain points during each lesson observed. The quantitative data from the observations (Table 4.8 below) shows the number of lessons in which each teacher employed ways to implement each principle in their observed classes.

Table 4.8: Number of lessons where techniques to implement the five CL principles were observed

Year	Teacher	No of lessons observed	Positive interdependence	Individual accountability	Promotive interaction	Social skills	Group processing
Year 12	T1	6	6	6	6	3	2
	T2	6	6	6	6	4	3
	T3	6	6	6	6	5	2
Year 11	T4	6	6	6	6	4	2
	T5	6	6	6	6	5	4
Year 10	T6	6	6	6	6	6	3
	T7	6	6	6	6	6	0
	T8	6	6	6	6	0	0
Total		48	48	48	48	33	16

Based on the findings of classroom observations conducted in the lessons taught by teachers who received the in-service formal teacher training (T1 to T6), it is evident that these teachers applied strategies to promote positive interdependence, individual accountability and promotive interaction in all the lessons observed. However, T1, T2, T3, T4 and T5 did not consider social skills instruction in all their classes. T6, on the other hand, considered social skills in all his classes. When these teachers were asked about not implementing social skills instruction in all their classes, they all indicated students' experiences and familiarity with CL as the reason. T1 said,

This is not the first time for students to use CL. I feel they have already mastered some social skills and they have become part of students' personal behaviours. Yet, when there are new social skills that I feel students need, I certainly explain them.

Regarding group processing, when teachers T1 to T6 were asked about not implementing it in all their classes, they indicated two main reasons. As for the social skills, students' experiences and familiarity using CL was given as a reason. For instance, T4 said about group processing that students in Year 11 “*have been using cooperative learning for more*

than one year. They can manage their work by themselves and review their work and interactions without me asking them to do that". The second explanation was the limited lesson time. T2 commented that, *"in some lessons, it is difficult to find available time for group processing, because the time is just enough for teams to complete their tasks"*.

As for the two teachers who either did not attend or did not complete the formal CPD (T7 and T8), Table 4.8 shows a less standard implementation of the five CL principles. T7 considered four principles but he did not implement group processing in any of his lessons. When he was asked about that, he said, *"I do not use group processing in my classes and I have no idea about it. I implement the principles that I previously mentioned"*. T8 considered the first three principles but he did not implement either group processing or social skills instruction in any of his lessons. When asked about that, he said, *"I think the teacher should focus on teaching the lessons and the curriculum. Teaching social skills is not my job"*.

In addition, the findings of the teachers' interviews regarding the ways of implementing the principles of cooperative learning were confirmed by classroom observations with all the teachers, except T3 and T5. T3 indicated in the interview that he used student roles such as leader and timer to promote positive interdependence among group members, but this was not confirmed by his classroom observations (Section 4.4.2, p. 138). When asked about that, he once again argued for students' familiarity with the CL methods and their developed *"ability to manage their work without those roles"*. Similarly, T5 mentioned in the interviews that he used student roles in his classes but it was observed that there was no consistent use of them in all his lessons (Section 4.4.2, p. 138), and familiarity with the process was once again give as an explanation for that. Table 4.9 below shows some examples of teachers' ways of promoting the principles of cooperative learning based on classroom observations.

Table 4.9: Examples of teachers' techniques to promote the principles of CL

Methods of promoting the CL principles		Examples
Positive Interdependence	Assigning Roles to Group Members	<i>"Now each group decides who are the leader, timer, checker and writer. So each member has a different role that helps you to complete the task"</i> (T5 - Observation 4).
	Resources Interdependence	<i>"Each group member has a different part of the task and material so learn your part first and then help your teammates to learn it"</i> (T2 - Observation 1).
Individual Accountability	Explaining Group Members' Responsibilities	<i>"Firstly, each member has to learn his share of the material and answer his task-related questions. Then, make sure all your teammates learn it"</i> (T8 - Observation 5).
	Random Selection	<i>"After finishing achieving the task, I will randomly select a member from any group to answer. Be sure each member in the group is prepared to answer"</i> (T1 - Observation 4).
Promotive Interaction	Verbal Reinforcement	T4 walked around the groups as students worked in teams and he announced, <i>"Discuss the question together, explain your understanding of the material to your teammates and if something is unclear ask your teammates to help you"</i> (T4 - Observation 5).
Social Skills	Social Skills Instruction	T6 wrote some social skills on the whiteboard and before the students worked on their tasks, he stated, <i>"Remember to listen carefully to each other, take turns to talk, keep a low voice when you speak and agree with teammates"</i> (T6 - Observation 6).
Group Processing	Students' Reflection on their Work	Before finishing the lesson, T3 said, <i>"In three minutes each group determines two helpful actions that helped them to complete the tasks and two unhelpful actions that did not help them to effectively complete the tasks"</i> (T3 - Observation 3).

4.4.5 Students' behaviours in group work

The second theme emerging from the inductive analysis was how particular facets, such as interaction, collaboration and social skills, were presented through the students' behaviours in class. These are determined by a number of factors but one of the most important is the

teachers' approach and actions in the classroom. The students' behaviours in three classrooms in Year 10, Year 11 and Year 12 were observed in the light of the five principles of cooperative learning (Johnson & Johnson, 2014) (Appendix H, pp. 237-241). For each cooperative learning lesson attended by the researcher, one group was randomly selected to be observed.

In terms of **positive interdependence**, the students in the groups in Year 10, Year 11 and Year 12 cooperatively worked towards the same goals determined by the teacher. They helped and relied on each other to achieve the task. An example of this is from T2's class:

[The leader of the group said to his teammates] *"We have nine minutes to do the task. So, in three minutes, each of you must finish your share of the task. Then, in four minutes every one explains his part and in the last two minutes we agree on one answer."* [One group member said] *"I could not find the text that helps to answer my question"* [Another member said] *"Let me see ...this is in page 89 in the second paragraph."* [The timer said] *"Time's up and let us discuss our answers."* [The checker said] *"Is everything clear or does someone need help?"* (T2 - Observation 2).

However, in Year 10 lessons taught by T6, T7 and T8, there were some group members in some classes who did not play their roles and did not provide help to their teammates. This happened more frequently in T7's and T8's lessons than in T6's lessons.

Regarding **individual accountability**, the students in Year 10, Year 11 and Year 12 groups generally did their share of the teamwork that was assigned by the teacher. Then, as a whole they discussed their work with the other group members. Furthermore, the checker made sure that the group members understood the material and/or the answers. An example of this is from T4's class. At the beginning, each member of the group worked individually on their part of the material and the task to be completed. When all members finished processing their part of the information, each member explained it to his teammates and helped them understand it. After all the members had finished the task, the checker asked, *"Did everyone understand all the parts of the text?"* (T4 - Observation 3). However, in Year 10 (T6, T7 and T8), there were some group members in some classes who did not bear their responsibility to carry out their part of the tasks and participate in the teamwork. Therefore, sometimes other group members completed their share of the activity as well as their own part in order to complete the task. Once again, this was observed more often in T7's and T8's lessons than in T6's.

In terms of **face-to-face interaction**, the students in Year 10, Year 11 and Year 12 groups provided and received explanation on the content studied in the lesson. After finishing working on their parts of the task material, each member explained his answer and what he understood and had learnt from his part to his teammates. Some members asked some questions regarding their teammate's explanation to clarify some points. An example of this is from T1's English Language class. The topic was the rules for using relative clauses. Each member had different sentences to write adding the suitable relative pronoun in the blank in each sentence and explained his answers to his teammates. The following conversation was heard between group members:

1st student: *For the sentence number 6 I wrote (that) so the sentence is: A jockey is a person that rides a horse in a race.*

2nd student: *Why did you choose that? This is incorrect; with people you should use (who) not (that).*

3rd student: *No, with people we can use both (who) and (that).*

4th student: *I agree with that: with people we can use both (who) and (that). So, using anyone of them is correct. Also, with things we can use (which) and (that).*

2nd student: *OK. OK. I understand now. What about the next sentence?* (T1 - Observation 3).

However, as observed in relation to the other two principles above, in Year 10 (T6, T7 and T8), there were some group members in some classes who did not engage in the discussion and sometime provided answers without further explanation. This was once again observed more in T7's and T8's lessons than in T6's.

In terms of **using social skills**, in general, the students in the groups in all the years showed an ability to interact in a polite way with the others, such as thanking the previous group for their answer, agreeing on the same answers, actively listening, taking turns and keeping a low voice when speaking. The students always used a set sentence when they presented their group's answers. An example of this is from T4's class. "*I thank the previous group for their answer and I agreed with my teammates on....*" (T4 - Observation 3). Sometimes, some students forgot to use the set sentence before giving their answers and then the teacher told them, "*You missed something important...*". After that, these students used the set sentence and answered again. However, in Year 10, the students in the groups in T8's lessons rarely used this kind of set polite sentence and T8 did not ask them to do so.

In T6's and T7's lessons, the students usually used these social skills and both teachers reminded and asked the students to use them.

Regarding **group processing**, as a whole before finishing the lesson the students in all the groups mentioned some actions that helped them complete the tasks so they could continue using them in the future. Additionally, some actions that did not help them to effectively complete the tasks were discussed so group members could avoid them in the future. However, this did not happen in every class that was observed. It happened when the teachers asked the students to do so (Table 4.8, p. 142) but not through the students' own initiative. An example of this is from T5's class, where one student from a group stated what he agreed with his group: *"The good thing is that we helped each other to finish the tasks and each member did what he had to do. The problem was that with some tasks we did not finish on time. So, we will try to monitor the time better now"* (T5 - Observation 4). However, in Year 10 the students in T6's lessons sometimes reflected on how they worked but in T7's and T8's lessons they did not do that at all.

In addition to the cooperative learning lessons discussed in the above, three lessons where the teachers (T9, T10, T11) used lecture-style were also observed, one lesson for each of the Years 10, 11 and 12. The traditional method classes were delivered by other teachers but to the same classes of students who were taught by CL under teachers T1 to T8. The students' behaviours in the three classes were fairly similar. The students sat in rows and they faced the whiteboard and the teacher. The teacher kept explaining and talking for approximately 30 minutes and the students listened to him. Students were not allowed to talk unless the teacher asked them a question. Therefore, the students' participation was limited to answering the teacher's questions. Questions were always asked to the whole class and students who felt they could answer put their hands up. Usually one or two students contributed with answers. Questions were intended to check students' understanding of the content delivered and were commonly asked at the end of the lesson. Sometimes the teacher asked students to carry out an exercise for three or five minutes about what he said as control practice. However, the students did those exercises individually (T9, T10, T11- Observations).

4.4.6 Monitoring

Four teachers (T1, T2, T5 and T7) indicated that they monitored and observed students when they worked in groups on the tasks. They said that they observed students' performance when they interacted with each other to understand the material, and students' commitment to the target social skills that were written on the whiteboard. Furthermore, they claimed that they intervened when it was necessary. For example, T1 said,

I walk around groups to observe group members' performance while they work cooperatively on the tasks and I give each group some time to observe during achieving the task. I watch their interaction and discussion to understand the material and do the task, so I monitor who participates or not and who is attentive. Also, I monitor their social skills that I wrote on the board while they do that. If they have any problems that obstruct their learning or ask for help, I will directly intervene and provide assistance (T1).

T3, T4 and T6 also gave similar answers when asked about monitoring and intervening but they also mentioned using an observation checklist written on the whiteboard. T4 explained the process:

I monitor and watch groups' work when they are dealing with their tasks to check their interaction, participation and social skills. If one member of any group breaks the rules that I wrote on the observation checklist, such as participation, speaking in a low voice and taking turns, I will put (×) near his group's number. This is to indicate what a problem this group has or which rule was broken. Usually, this group automatically solves the problem without me intervening. If there is a serious problem, I will intervene to sort it out (T4).

T3, T4 and T6 commented on how their monitoring and movement in the classroom is different from lecture-style to cooperative learning. For instance, T3 said that,

in the past, I stood in front of the classroom during lesson time. Also, my movement in the classroom was just restricted to the front of the whiteboard... Now, I can walk around the groups and check out their work. Now, I know my students more than when I used the lecturing method.

What the teachers said in the interviews was confirmed by the classroom observations. The teachers walked between groups and stopped for a period of time at each group to watch and listen to group members' discussion and interaction. T4 and T5 sometimes sat with each group as a member to observe them. While the teachers walked around the teams, they asked them to take responsibility to carry out their parts of the task, understand the content, and then explain and discuss their learning and understanding with their teammates. Several

times the teachers encouraged students to interact with each other and agree on one answer. In addition, in general the teachers reminded the students to employ the social skills that were written on the whiteboard and to achieve the task on time. In addition, the teachers answered students' questions. However, T7 did not spend the whole time on monitoring when the students were working on the tasks. He observed the students for a period of time and then he went back to sit at his desk and was busy with a book and some papers or wrote something on the whiteboard. This was observed in all his lessons.

T8's monitoring of group work, however, was different from all the other teachers mentioned above since he did not mention observing or watching students' social skills. He said *"I monitor if group members work on the tasks or not. Also, if they understand how the tasks can be achieved or not....I intervene when students ask for help or they have a problem"* (T8). In addition, T8 corrected students' homework while the students worked on the task. When T8 was asked about that, he said, *"The cooperative learning method has provided me with enough time to check and correct students' homework. In the past, I used to take it home and mark it there. But now, I have time to mark it in the classroom"*.

4.4.7 Rewards

In general, in the interviews teachers said that using rewards in CL lessons is good and helpful and they mentioned the reasons behind that, which were related to motivation and teamwork. For example, T4 commented that *"It is kind of fun to encourage students to learn and work as a team"*. T5 also considered it *"a useful idea because it motivates students to put an effort to learn and motivates them to work in their group to get the reward"*. In addition, all teachers mentioned that, if the teacher wanted to give a reward, it should be given to groups, not individuals. T1 and T7 explained that the reason for this was that *"If the reward is given on an individual basis, it will not promote cooperative learning among students. Group members will not cooperate as the reward may go to another person"* (T1).

Although the teachers had positive views regarding using rewards in cooperative learning lessons, they did not use them in their classes. It seemed that they had not actually thought about this before being asked in the interview. T1 said, *"I do not use rewards with my students. I haven't thought about using them in my classes"*. Similarly, T4 mentioned that *"I do not use it....There is no specific reasons behind that but I did not plan to use rewards with my students"*. Additionally, T2 and T7 mentioned another reason, which is

related to funds. T7 said, *“I would need funds and there is no budget in the school for that”*. When the teachers were asked about the kind of rewards they would give if they could, T2 said that *“Rewards do not have to be costly, but they should have value for students at the same time”*. It seemed that this is the reason why T4 and T5 said the reward should be in the form of marks. T5 commented that *“marks are the most powerful influence on students in the high school....They need these marks in order to get high grades to go to university”*.

When the teachers were asked about the criteria that would be considered if they used rewards, they had slightly different answers. T1, T2 and T6 said that the criteria for rewarding should be giving the correct answers to the task-related questions, working as a team and commitment to social skills. T6 said particularly emphasised that, *“students should have been committed to social skills, such as careful listening to each other and keeping a low voice when speaking”*. However, for T3, T4, T5, T7 and T8 the main criteria should be giving the correct answers to the task-related questions and working as a team.

The teachers’ classroom observations confirmed what the teachers mentioned in the interviews. The teachers did not use rewards in any of their lessons. However, it was also observed that, although the teachers did not give students material rewards, all of them provided moral rewards. When the students answered task-related questions correctly and explained the method behind answering successfully or a group cooperatively worked well, the teachers praised the students. For example, a group member presented his group’s answer, and then T4 said *“good answer and good explaining; well done. Good job!”* (T4 - Observation 2). Furthermore, when a group worked cooperatively and explained the group’s work correctly, T1 said to the class, *“This group is a good group; they work with each other as a team and answer the task-related question correctly. Excellent!”* (T1 - Observation 4). In addition, in some classes, when a group showed amazing performance in terms of their work as a team or their work presentation, T5 asked the students in the class to give the team a round of applause.

4.4.8 Assessment and evaluation of performance

Six teachers (T1, T2, T3, T4, T5 and T6) indicated that they informally assessed students’ learning after the groups presented their answers by randomly selecting any member of any group to answer a question. For instance, T2 explained that,

Usually, the task contains of four questions but I ask a group member to answer one of them....Then, I randomly select another member from another group to answer

another, related question. I make sure each group has the opportunity to be asked and present the answer for a part of the task (T2).

In addition, these six teachers provided students with feedback related first to their academic achievement in terms of their accuracy and the process they went through to arrive at the correct answer. Secondly, feedback related to students' commitment to social skills and their participation was given while teachers "*observed them when they worked on the task*" (T1). However, in addition to oral feedback, T3, T4 and T6 also used observation checklists hung on the whiteboard to show the students the feedback, while other teachers did not use this method. T4 said,

I put (✓) on the observation checklist for each group that answers correctly after discussing their answer in the class with other groups. Also, I observe and evaluate group members' social skills that I wrote down on the observation checklist, while groups cooperatively work on the tasks. So, group members can have feedback regarding that when they look at the observation checklist (T4).

T7 and T8 used a different a method to assess students' learning after group work. They did not randomly select a member of any group to answer the questions as other teachers did. Instead, they questioned the presenter who had been selected by group members to play this role to present the group's answer. T7 provided feedback in terms of students' academic achievement and commitment to social skills, similar to the other teachers. However, T8's feedback was related to students' academic achievement only without any reference to their social skills.

None of the teachers used marks when they assessed students' learning and understanding after group work. The reason behind that was related to the Ministry of Education's regulations. As an illustration, T6 mentioned that,

As a teacher, I cannot be free to use marks as I wish: 10% of the marks are given for attendance and homework while 90% of the marks have to be used for mid-term and final exams. So, I could not use these marks for assessing students' learning after completing the tasks in every lesson.

When the teachers were asked for suggestions on how the assessment could help cooperative effort, six teachers (T1, T2, T3, T4, T5 and T6) mentioned:

using a random selection of group members when they have finished working on the task. So, all group members work cooperatively and bear responsibility to learn in order to understand the information to be ready to answer when one of them is randomly chosen (T3).

T7 said that “*the group whose members have each achieved 80% or higher could get a reward*” while T8 said that he had “*no idea but it but could be with using marks*”. T1, T5 and T6 commented positively on students’ assessment in cooperative learning compared with the traditional method. T1 said,

In the traditional method, I should check that my students, whose number can sometimes be 40 or more, have thoroughly understood the lesson. This is impossible and, actually, at the end of the lesson I just ask two or three students to check their understanding of the lesson content. Contrastingly, in the cooperative learning method, if students are divided into groups of four and I have 10 groups, I need to check the understanding and worksheets of 10 students only. This is because if I check a student’s understanding of the lesson content from each group, it means I check all students’ understanding of the lesson content in the class.

In addition, T6 said in the lecturing method that, he “*focused on students’ academic performance only but now I pay attention to students’ commitment to social skills as well*”. He also commented that in CL “*there is time available to know students’ skills and their level of performance*” while in the lecturing method most of the lesson time is used to “*deliver and give information to students*”. The CL classroom observations confirmed what the teachers mentioned in the interviews. An example from T5’s maths lesson shows how he randomly selected members of any group to assess students’ understanding of triangle angles. The teacher gave the students a task that contained four different questions about a triangle where the sizes of two angles were given. Each member had to find the size of the third angle and understand the method of reaching the answer. Each member in the group worked on a different question to his teammates. After the students had finished working on the task, the teacher randomly asked one student from a group to stand up and explain the answer for question 1 on the whiteboard. The student provided the answer and explained why the size of the third angle was 55. The teacher thanked him and asked the other groups whether they agreed with that or not. After that, the teacher randomly selected another student from another group and repeated the process with other mathematical problem (T5- Observation 5).

All the teachers, except T8, assessed and provided feedback on students’ commitment to social skills that had been written on the whiteboard or on the observation checklist. They did that while the students worked on the task and interacted with each other or presented their group’s answer. An example of this comes from T7’s lesson when a student had a different answer from the previous group and he wanted to mention his group’s answer directly without the polite set sentence. The teacher stopped him and told

him “*You forgot something before presenting the answer; remember what it is?*” (T7 - Observation 4). The teachers had trained students to use some polite expressions for that. The student remembered and he said, “*I thank the previous group for their answer and I agree with my teammates on...*” (T7 - Observation 4).

4.5 Research Question 3

What are participant-students’ perceptions of the benefits and challenges of cooperative learning?

In order to answer Research Question 3, a questionnaire (Appendix G, p. 231) was administered by the teachers to 92 students over two days, 1st and 2nd November 2015, in the school premises. In addition, semi-structured interviews were conducted with nine students (three students in each year) over five days, 8th and 12th November 2015, in the school premises (Appendix F, p. 230). The focus of the questionnaire and semi-structured interviews was on the main themes emerging from deductive analysis that are related to Research Question 3 (see Section 3.9.1, pp. 106-109): general perceptions of CL, academic and social outcomes, classroom procedure adopted by the teacher, behaviours in group work and challenges of working cooperatively. The data from the questionnaires and interviews was triangulated in order to present a collective answer to this research question.

4.5.1 Students’ general perceptions of cooperative learning

The questionnaire findings show that the majority of students in the three classes had positive views of CL and either agreed or strongly agreed with the affirmative statements presented. In general, students in all three years seemed to like cooperative learning, with more than half of the respondents in Year 10 being quite positive about it (60.6% / 20 students), but it is also observed that in Year 11, 32.3% (10 students) were very positive about it (strongly agree) in comparison to just 15.2% (5 students) in the first year. When asked whether they preferred to be taught by cooperative learning or traditional methods, the majority of students in all three years indicated that they preferred CL by either agreeing (Year 10: 42.4% / 14 students; Year 11: 61.3% / 19 students; Year 12: 46.4% / 13 students) or strongly agreeing (Year 10: 30.3% / 10 students; Year 11: 19.4% / 6 students; Year 12: 32.1% / 9 students) with the statement (Table 4.10, below).

Table 4.10: Students' general perceptions of CL

Questionnaire statements	The class	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
I like cooperative learning in the classroom	Year 10	5 (15.2%)	20 (60.6%)	4 (12.1%)	2 (6.1%)	2 (6.1%)
	Year 11	10 (32.3%)	13 (41.9%)	4 (12.9%)	3 (9.7%)	1 (3.2%)
	Year 12	6 (21.4%)	15 (53.6%)	6 (21.4%)	1 (3.6%)	0 (0.0%)
I prefer to be taught by cooperative learning compared to traditional methods	Year 10	10 (30.3%)	14 (42.4%)	5 (15.2%)	2 (6.1%)	2 (6.1%)
	Year 11	6 (19.4%)	19 (61.3%)	3 (9.7%)	3 (9.7%)	0 (0.0%)
	Year 12	9 (32.1%)	13 (46.4%)	4 (14.3%)	1 (3.6%)	1 (3.6%)
I think it is possible to learn any subject with cooperative learning	Year 10	11 (33.3%)	15 (45.5%)	3 (9.1%)	1 (3.0%)	3 (9.1%)
	Year 11	6 (19.4%)	14 (45.2%)	6 (19.4%)	4 (12.9%)	1 (3.2%)
	Year 12	10 (35.7%)	9 (32.1%)	4 (14.3%)	3 (10.7%)	2 (7.1%)
I like the subject that is taught by using cooperative learning	Year 10	7 (21.2%)	12 (36.4%)	10 (30.3%)	1 (3.0%)	3 (9.1%)
	Year 11	12 (38.7%)	7 (22.6%)	8 (25.8%)	2 (6.5%)	2 (6.5%)
	Year 12	4 (14.3%)	13 (46.4%)	9 (32.1%)	2 (7.1%)	0 (0.0%)

The statistical findings are corroborated by data from the interviews. Some students (S3, S4, S6, S7 and S8) provided reasons behind their preference for the CL lessons. For example, S3 (Year 10) said that,

I actively and cooperatively work with my group members in order to understand a specific piece of information. This is very enjoyable to me. Now, I have role in the class to play. I search about the information, understand it and discuss it with my teammates. However, in the lecturing method, I feel bored and just passively listen to the teacher.

Similarly, S6 (Year 11) also commented on the enjoyment and active participation and added that “*It is more enjoyable than the lecturing method when I listen to the teacher’s talk and there is no other voice except the teacher*”. Furthermore, S8 (Year 12) said he preferred to be taught by cooperative learning because he benefited from it more than from traditional teaching methods. He mentioned that,

This atmosphere helps to create new friendships and makes cooperative learning quite fun and usually I get good grades - better than I get by using the lecturing method. In the lecturing method, the teacher does not allow conversation between students, and he punishes those who do so. Also, I get bored and feel sleepy listening to the teacher’s explanation for may be more than 35 minutes.

On the other hand, there were some students in Year 10 (12.1% / 4 students), Year 11 (12.9% / 4 students) and Year 12 (21.4% / 6 students) who were not sure about liking cooperative learning. Moreover, less than 10% of students in all three years either disagreed or strongly disagreed with this statement (Table 4.10, above). Similarly, there was a small percentage of students who did not express a preference in relation to CL or traditional teaching methods. The data (Table 4.10, above) shows that a number of respondents were either not sure (Year 10: 15.2% / 5 students; Year 11: 9.7% / 3 students; Year 12: 14.3% / 4 students) or expressed disagreement (Year 10: 6.1% / 2 students; Year 11: 9.7% / 3 students; Year 12: 3.6% / 1 student) or strong disagreement (Year 10: 6.1% / 2 students; Year 11: 0%; Year 12: 3.6% / 1 student) with the statement.

The student interviews indicate that group composition may be a key factor behind students' preferences. As an example, S1 (Year 10) said that he preferred CL when he works *"with an interactive and participative group"*; however, when group members did not participate and provide help to others or *"when all group members are weak students and they cannot complete the group's task"* he preferred the *"lecturing method and working alone"*. Personal relationships also seem to play an important role according to S1, who said that *"sometimes some group members do not like working with me and I do not like working with them or other students who want to dominate the group's discussion, and I prefer to be taught by the lecturing method than working with these kinds of students"*.

In addition, S5 (Year 11) mentioned students' familiarity with cooperative learning as another reason. He commented that,

[W]e are not familiar with cooperative learning yet and we have got used to work individually. We have been taught through the traditional method for many years. As to cooperative learning, we have come to use it for about one year but only with a few subjects. Each semester we are taught by using cooperative learning with two or three subjects while the majority of subjects are still taught by using the lecturing method. I am still not sure of its [CL's] preference to the traditional method.

Competitiveness and the desire to achieve higher grades than their peers seem to have an effect on students' preference in relation to teaching methods, as mentioned by S2 and S9. For instance, S2 (Year 10) mentioned that *"I like individual work as it helps me to prove my ability to the teacher"*. Moreover, S9 (Year 12) said *"sometimes I prefer to be taught by using the lecture method and working individually because I can get high grades than when I have to help and explain things to others."*

The majority of questionnaire respondents in all three years either agreed or strongly agreed with the statement on the possibility of learning any subject with cooperative learning (Table 4.10, above). However, 19.4% (6 students) of the students in Year 11 and 14.3% (4 students) in Year 12 were still not sure about the possibility of learning any subject with cooperative learning in comparison to only 9.1% (3 students) in Year 10. In addition, the combined percentages for students who either strongly disagreed or disagreed were as follows: in Years 11 (16.1% / 5 students) and 12 (17.8% / 5 students) with this statement when compared to the combined figures for Year 10 (12.1% / 4 students). As an example, in the interview S6 (Year 11) explained that,

It depends on the topic and the subject studied. Some topics or some contents are not compatible with the cooperative learning. The traditional method is effective in presenting complex information that we cannot learn on our own. For example, in the biology class, students are usually acquainted with many of the topics so cooperative learning is more effective than the traditional method. However, in mathematics, some axioms and laws are new to students and difficult to understand without the teacher's help. Only after the teacher's explanation can students work using cooperative learning.

The majority of the students in all three classes stated that they liked or strongly liked the subjects that are taught by using cooperative learning (Table 4.10, above). The combined figures are: Year 10: 57.6% / 19 students; Year 11: 61.3% / 19 students; Year 12: 60.7% / 17 students. However, some students in all classes (Year 10: 30.3% / 10 students; Year 11: 25.8% / 8 students; Year 12: 32.1% / 9 students) were still not sure about the statement and one reason for that was provided by S7 (Year 12) who commented that “*there are other subjects that I have not yet studied through CL so I am not quite sure if I would like to learn them by CL or not*”.

In general, students' perceptions of CL can be considered fairly positive, with the majority of the students saying that they liked cooperative learning and preferred to be taught by this method. However, some students were still not sure about that or preferred the lecturing method. The reasons mentioned above, along with the drawbacks of using CL discussed later (Section 4.5.6, pp. 168-169), may be some of the reasons why some students disagreed with the social and academic benefits of using CL, which are discussed in the next session.

4.5.2 Students' perceptions of academic outcomes

When it comes to academic outcomes, data collected shows that the majority of the students in the three classes believed they benefited from using cooperative learning more than when having lecture-style lessons (Appendix K - Table 1, p. 254). The majority of students in Year 10, Year 11 and Year 12 either agreed (Year 10: 51.5% / 17 students; Year 11: 41.9% / 13 students; Year 12: 46.4% / 13 students) or strongly agreed (Year 10: 24.2% / 8 students; Year 11: 38.7% / 12 students; Year 12: 35.7% / 10 students) with the statement that they **understand the content** of the lesson better when it is delivered by CL rather than by lecture-style. For instance, S8 (Year 12) said,

I engage in mutual discussion with my teammates. They explain to me the sections that I cannot understand. If I encounter a difficulty in understanding the lesson, I seek help from them through mutual discussion. Also, I can ask any question to my teammates to clarify any point of the lesson. Therefore, my learning has improved. However, in the lecturing method, it is not allowed for me to discuss with my classmates and I could not ask the teacher any question when I want to clarify anything in the lesson. Therefore, I learn and understand the lesson from cooperative learning more than lecture-style.

S6 (Year 11) also commented on the peer-learning aspect, saying that when they engaged “in discussion, dialogue and explanation in order to arrive at information to answer the question given by the teacher” he could understand from his “teammates more than from the teacher.” Moreover, S7 (Year 12) mentioned that “the discussion among the four group members over the task is really useful. We exchange views and explain to each other any vague or difficult point. In fact, I have learned a lot from my group members”.

The majority of the students in the three classes felt that using CL helped them with **thinking skills** more than the lecturing method, as shown in Table 1 (Appendix K, p. 254). The numbers for students who agree are: Year 10: 39.4% /13 students; Year 11: 48.4% / 15 students; Year 12: 46.4% / 13 students. As for strongly agree, the figures are: Year 10: 33.3% /11 students; Year 11: 29% / 9 students; Year 12: 28.6% / 8 students. For example, S9 (Year 12) commented that in the cooperative learning students worked to “understand the information and exchange ideas with group members using thinking skills to make correlations, analysis of answers and draw conclusions”. In contrast, S5 (Year 11) said, “In the traditional method, I do not find out information by myself. I do not use thinking skills and so my comprehension is lower”.

A higher percentage of students in all classes agreed (Year 10: 36.4% / 12 students; Year 11: 41.9% / 13 students; Year 12: 39.3% / 11 students) or strongly agreed (Year 10: 30.3% / 10 students; Year 11: 22.6% / 7 students; Year 12: 28.6% / 8 students) that using CL helped them with **problems-solving skills** more than lecture-style (Appendix K - Table 1, p. 254). As an illustration, S1 (Year 10) said that, *“after identifying the task’s questions, I suggest an answer and my teammates suggest a different answer. We discuss the answers together and analyse them. Then, we eliminate the wrong answer and agree on a common correct one.”*

In addition, the majority of the students in all three years thought that CL helped them with the **retention** of the lesson content (memory) more than the lecturing method. The figures for students who agree are: Year 10: 45.5% /15 students; Year 11: 48.4% / 15 students; Year 12: 50% / 14 students. As for strongly agree, the figures are: Year 10: 33.3% /11 students; Year 11: 25.8% / 8 students; Year 12: 21.4% / 6 students. For example, S2 (Year 10) said he believes that such retention is due to the fact that there is a process where, *“I explain the information to my group members. After that, the teacher will explain it again after groups present their answers or their work. This makes me reiterate the piece of information more than once, and it helps me remember it later”*. S3 also (Year 10) mentioned that, *“when I have worked on something and understood it on my own, I rarely forget it. However, when I get it from just listening to another person, I may easily forget it”*.

Another academic benefit of using CL is **concentration** on tasks, which was indicated by the majority of students in all classes (Appendix K - Table 1, p. 254). The figures for students who agree are: Year 10: 42.4% /14 students; Year 11: 41.9% / 13 students; Year 12: 42.9% / 12 students. As for strongly agree, the figures are: Year 10: 27.3% / 9 students; Year 11: 32.3% / 10 students; Year 12: 25% / 7 students. For instance, S4 (Year 11) said that, *“throughout the work in the group, I keep focused on the lesson and working on the task and discussing it with my teammates whereas, in the lectures, I may lose concentration on the teacher’s explanation and think about something else that is not related to lesson content or the teacher’s talk”*.

In addition, high percentages of students in the three classes either agreed (Year 10: 51.5% / 17 students; Year 11: 41.9% / 13 students; Year 12: 42.9% / 12 students) or strongly agreed (Year 10: 15.2% / 5 students; Year 11: 29.0% / 9 students; Year 12: 25.0% / 7 students) that CL increased their learning **motivation** in comparison with lecture-style.

Year 11 and 12 figures show that there is a difference of more than 10 percentage points compared to students who strongly agreed with the statement in Year 10. For example, S5 (Year 11) explained that *“when the teacher presents the lesson while I passively listen to him, I get bored and I feel sleepy. However, when I work on the task with my group members, this increases my motivation to learn.”* S1 also (Year 10) believes that *“we feel that we have the ability to learn, and this motivates us”*.

Although most students in all three years seemed to believe that CL encouraged them to be **autonomous learners**, the questionnaire findings show a much higher percentage of students in Year 12 (60.7% / 17 students) agreeing with the statement. The combined figures for 'agree' and 'strongly agree' are 82.1% (23 students) (Appendix K - Table 1, p. 254). A possible explanation for this difference is that the majority of the students in Year 12 have been using CL for one and half years compared to students in Year 11 (one year) and in Year 10 (less than one semester). It is probable that some students need more time and experience with cooperative learning to benefit from it. For instance, S6 (Year 11) provided more information about autonomous learners and CL by saying that *“I learn to be self-dependent in learning with the help of my group mates. Conversely, in the traditional method, I depend on the teacher for receiving the information without much effort”*.

Finally, the majority of the students in Years 11 and 12 indicated that CL increased their **achievement** test scores compared with the lecture-style method. However, although students in Year 10 agreed (21.2% / 7 students) or strongly agreed (15.2% / 5 students) with that, most of them (51.5% / 17 students) said that they were not sure about whether their achievement test scores had increased with CL. S3 (Year 10) explained that by saying *“we have just been using cooperative learning for less than one semester. So, we have not done the final exam and received the report in order to know to what extent cooperative learning affects my test scores. Therefore, I am not sure about that”*. In contrast, in Year 12, where students had been using CL for more than one year and had already gone through the assessment process, the percentage of participants who agreed with the statement is 53.6% (15 students) and those who strongly agreed is 25% (7 students). From the above mentioned, it can be said that the majority of the students in the three classes had positive perceptions of the academic benefits of CL in comparison with lecture-style.

4.5.3 Students' perceptions of social outcomes

When it comes to social outcomes, data collected shows that the majority of the students in the three classes benefited from using cooperative learning more than lecture-style (Appendix K - Table 2, p. 255). The majority of the students thought that CL helped them with **interpersonal relationships** more than the lecturing method. The figures for those who agreed are: Year 10: 27.3% / 9 students; Year 11: 35.5% / 11 students; Year 12: 32.1% / 9 students. As for strong agreement, the figures are: Year 10: 51.5% / 17 students; Year 11: 48.4% / 15 students; Year 12: 46.4% / 13 students). For instance, S2 (Year 10) said working in a group *“creates an opportunity to know other students. I now know some students in my team who I did not know before and we have a good relationship with each other”*. In addition, S5 (Year 11) commented that, *“in the traditional method, a student sitting in the front of the row in the classroom cannot form a relationship but, in the cooperative learning, these rows disappear in the group; students know and talk to each other”*.

In terms of **increasing the self-esteem**, the majority of the students in all three years felt that using CL helped them develop it more than the lecturing method. The number of students in Year 12 who strongly agreed is higher than the other two years (42.9% / 12 students) (Appendix K - Table 2, p. 255). Since increasing self-esteem is a long time process, this is probably the reason for such figures being higher in this group, which had been using CL for more than one year. For instance, S9 (Year 12) commented that *“I and my teammates have got used to working independently, searching for information and understanding it without reliance on the teacher. This has enhanced my self-esteem”*. In addition, S3 (Year 10) said that,

When I listen to the teacher or work on my own, I have no confidence that my understanding of the lesson or answer is correct. However, in the cooperative learning, I have gained more confidence that my understanding of the lesson or answer is correct. The reason is that I check it out with my group members, and we all agree on it.

Most students-participants in all years investigated indicated that using CL helped them with **reducing anxiety** in comparison with the lecturing method (Appendix K - Table 2, p. 255). The combined figures for ‘agree’ and ‘strongly agree’ are: Year 10: 78.8% / 26 students; Year 11: 77.4% / 24 students; and Year 12: 75% 21 students. As an illustration, S9 (Year 12) said, *“I can understand the lesson content even if it is difficult as my*

teammates will help me. I am not worried to be selected by the teacher to answer or explain anything related to lesson content.”

When asked about their **enjoyment in learning**, once again responses were highly positive with small differences between years but still with all three classes agreeing or strongly agreeing that CL increased their pleasure in learning more than when taught by lecture-style (Appendix K - Table 2, p. 255). For example, S7 (Year 12) mentioned that,

In the traditional method, I sit and listen to the teacher’s talk, and I am not allowed to talk with my classmates during the class. I even get punished if I do so. Conversely, in the cooperative learning, I have been given freedom in the class. Learning through working with my group members, sharing ideas with them and conversing with them are real fun and the teacher encourages us to do that.

Using CL seems to also have improved students’ **communicative skills** in comparison with the lecturing method. However, the questionnaire findings show that the percentage of the students in Year 10 who agreed with the statement (36.4% / 12 students) is quite low compared to Year 11 (48.4% / 15 students) and Year 12 (50% / 14 students) (Appendix K - Table 2, p. 255). A possible explanation for this difference is that the majority of the students in Year 11 and Year 12 had been using CL for one year or more compared to students in Year 10 (less than one semester) and therefore had been able to gradually develop their communication skills. It is probable that some students need more time and experience with cooperative learning to benefit from all its principles and practices. For example, S1 (Year 10) provided further insights by saying that,

During the work of the group, members communicate with each other. This is good. I have now become more interested in listening to others and having a dialogue with them. Each student takes his turn in speaking, and this is most vital for group work. Therefore, it is normal that cooperative learning helps develop my communication skills during the group’s work. Formerly, in the traditional method, I felt shy when talking with other students. Now, this shyness is gone.

The importance of time for developing a pattern of behaviour or learning strategies also seems to be confirmed by the answers students gave to the question regarding **conflict-solving skills**. Although the majority of the students indicated that using CL helped them to improve their ability to negotiate conflict compared with the lecture-style method, the figures for strongly agree in Year 12 are much higher (42.9% / 12 students) than the figures for Year 10 (24.2% / 8 students) and Year 11 (29% / 9 students). S8 (Year 12), for instance, explained that by saying:

When my answer differs from my teammates, we justify our answers to each other. The one who manages to convince the other with his answer, his answer will be chosen. Or, sometimes we synthesise part of my answer and part of his answer in order to form one common answer. In this way, it is not difficult to reconcile our differences.

Additionally, S9 (Year 12) pointed out that,

We respect the opinions of all group members. When different opinions emerge, we try to reconcile them in order to arrive at a common answer that all members agree on and honour. Sometime, we vote in order to do that.

From the above mentioned, it can be said that the majority of the students in the three classes had general positive perceptions of the social benefits of CL when compared with lecture-style.

4.5.4 Perceptions regarding classroom procedures adopted by the teacher

With respect to classroom procedures adopted by the teacher, students' perceptions of the suitability of the **teacher implementation of CL procedures** in the class (Appendix K - Table 3, p. 256) were generally positive, with a gradual increase in the percentages from Year 10 (21.2% / 7 students), to Year 11 (35.5% / 11 students) to Year 12 (39.3% / 11 students) of those who strongly agreed with the statement.

The results of the questionnaire suggest that the majority of the students in all years believed that the **materials** that were given by the teacher were appropriate to their level (Appendix K - Table 3, p. 256). In addition, most students in the three classes also agreed (Year 10: 45.5% / 15 students; Year 11: 54.8% / 17 students; Year 12: 42.9% / 12 students) or strongly agreed (Year 10: 33.3% / 11 students; Year 11: 22.6% / 7 students; Year 12: 32.1% / 9 students) that **assigning roles**, such as leader, in teams assists team discussion and work and was beneficial to their learning. As an example, S6 (Year 11) said, "*when we have roles work becomes coordinated and organised, and the group's performance becomes enhanced. It helps us to know what it is expected from each other*". However, although most students in the three classes indicated the importance of these roles in group work and discussion, S2 (Year 10) said that "*sometimes students do not do their roles that the teacher assigned to them because the teacher does not make sure students play their roles*". This confirms the finding of Section 4.4.5 (p. 144) that indicated that some students in the groups in some classes in Year 10 did not play their roles in the groups. This happened in T7's and T8's lessons more than in T6's lessons. A possible explanation for

this difference is that (as mentioned in Section 4.4.6, p. 148) T7 and T8 did not monitor and observe students well while they worked on the task, which thus increased the phenomenon of free-riding.

Most students seemed to think that the way the teacher **divided students into groups** was suitable (Appendix K - Table 3, p. 256). For example, S4 (Year 11) said, *“this is because the teacher forms the group by assigning an excellent student and weak students together”*. In addition, the majority of the students in the three classes disagreed (Year 10: 39.4% / 13 students; Year 11: 25.8% / 8 students; Year 12: 32.1% / 9 students) or strongly disagreed (Year 10: 36.4% / 12 students; Year 11: 45.2% / 14 students; Year 12: 42.9% / 12 students) that putting high- and low-ability students in one group could just improve the learning of the *high*-ability students. Similarly, the vast majority of the students in all classes disagreed or strongly disagreed that having mixed-ability students in one group would only improve the learning of *low*-ability students. The findings of the questionnaire (Appendix K - Table 3, p. 256) show that the students generally agreed (Year 10: 30.3% / 10 students; Year 11: 29.0% / 9 students; Year 12: 21.4% / 6 students) or strongly agreed (Year 10: 57.6% / 19 students; Year 11: 51.6% / 16 students; Year 12: 60.7% / 17 students) that putting high- and low-ability students in one group could improve the learning of everyone in the group. For example, S7 (Year 12) mentioned that *“the excellent student learns through his explanation to his peers so his self-confidence increases and the information holds ground in his mind. The weak student learns from the explanation of the excellent student”*.

The questionnaire findings show that the combined figures (57.6% / 19 students) of the students in Year 10 who agreed or strongly agreed that the **assessment** was fair and suitable for cooperative learning activities were lower than those of students in Year 11 (67.7% / 21 students combined) and in Year 12 (71.4% / 20 students combined) (Appendix K - Table 3, p. 256). A possible explanation for this difference is that all teachers in Year 11 and in Year 12 used random selection when choosing a student to answer for the group in order to assess their learning. However, only one teacher (T6) in Year 10 did that while two teachers (T7 and T8) asked the presenters of the groups to provide the group’s answer. S2 (Year 10) said *“if the teacher assigns a student to present the group’s work, this student will know the answer but other group members may not. But, if the teacher randomly selects one member to answer, everybody works hard and participates”*.

As for the **number of students in the groups**, the majority of the students in the three classes preferred small groups of two or four students (Table 4.11, below). The percentages of students who preferred four members in a group are well above 50% in all years: in Year 10 (63.6% / 21 students), Year 11 (70.9% / 22 students) and in Year 12 (85.7% / 24 students). The percentage of students in Year 12 who preferred four students is much higher than students in any other classes. A possible explanation for this difference is that the students in Year 12 had been using CL for one and half years and were used to working with this number of teammates in a group, in comparison to students in Year 11 and in Year 10 who were relatively new to it. For instance, S3 (Year 10) said,

when the group is smaller, communication between students would be better, knowledge is relayed smoother, and discussion and explanation become more effective. More than four, it will be difficult to focus on the task and it is possible that some students will not participate.

Furthermore, S8 (Year 12) mentioned that “*four students in a group enhances the discussion and I can see three different views on the subject we discuss. But, when there are just two students, there is less group discussion and interaction*”.

Table 4.11: Students’ perceptions of their preferred number of students in a group

The optimum number of students in the group	2 students	3 students	4 students	5 students	more than 5 students	Total
Year 10	8 (24.2%)	1 (3.0%)	21 (63.6%)	1 (3.0%)	2 (6.1%)	33 (100.0%)
Year 11	7 (22.6%)	2 (6.5%)	22 (70.9%)	0 (0.0%)	0 (0.0%)	31 (100.0%)
Year 12	3 (10.7%)	0 (0.0%)	24 (85.7%)	1 (3.6%)	0 (0.0%)	28 (100.0%)

4.5.5 Students’ perceptions about their behaviours in group work

In terms of **positive interdependence** among students, the percentage of the students who strongly agreed that the team members work cooperatively towards the same goals increased progressively from Year 10 (18.2% / 6 students), Year 11 (29% / 9 students) to just below 50% in Year 12 (46.4% / 13 students) (Appendix K – Tables 4, 5 and 6, pp. 257-259).

A similar pattern of increasing positive perception can be observed in relation to how much students care for and help each other: in Year 10, 30.3% (10 students) strongly

agreed with the statement, in Year 11, this percentage increases to 45.2% (14 students), and it is 53.6% (15 students) in Year 12. However, there is no significant statistical difference between the three classes on the sharing of resources among team members, with most respondents disagreeing or strongly disagreeing with the statement (Appendix K – Tables 4, 5 and 6, pp. 257-259). This is possibly due to the fact that, as observed in class, each student had his own set of materials and textbooks so there is no need for students to share those resources.

With respect to **interaction** among students, most students in all the classes either agreed or strongly agreed that the team members actively engaged in discussing task material together. However, unlike the gradual progression in the percentages for 'strongly agree' observed in the previous questionnaire items, here the data varies. In Year 10, 42.4% (14 students) strongly agreed with the statements; in Year 11, this figure is 45.2% (14 students); however, it drops to 28.6% (8 students) in Year 12. Yet, in this same class, 53.6% (15 students) still agreed with the statement (Appendix K - Tables 4, 5 and 6, pp. 257-259).

In addition, the percentage of students in the later years who agreed that team members provided and received explanation was generally higher than the percentage in the initial year. For Year 10, 36.4% (12 students) agreed with the statement and there is an increase in the percentage to 58.1% (18 students) in Year 11 and 46.4% (13 students) in Year 12. However, there are no significant differences between years and levels of agreement in relation to students' perceptions of how much team members encouraged and praised each other, with the majority of the students in all years agreeing or strongly agreeing with the statement (Appendix K - Tables 4, 5 and 6, pp. 257-259).

When it comes to **individual accountability**, the percentage of the students who strongly agreed that each team members did his share of the teamwork is higher in Year 11 (32.3% / 10 students) and Year 12 (35.7% / 10 students) compared to students in Year 10 (18.2% / 6 students) (Appendix K - Tables 4, 5 and 6, pp. 257-259). However, the majority of the students in the three classes indicated that the team members checked each other's understanding, with no relevant statistical differences among them. In addition, the statement related to free-riding shows that the percentage of respondents who agree or strongly agree that some team members did all or most of the group work and one or two students did nothing decreases from 27.3% (9 students) combined for Year 10, to 16.2% (5 students) combined for Year 11, reaching 14.3% (4 students) combined for Year 12. From

the above mentioned, it can be said that, in general, the students in Year 10 showed less positive interdependence, individual accountability and interaction in group work than students in Year 11 and Year 12. This confirms the findings for students' behaviours in group work (Section 4.4.5, pp. 144-147).

In terms of **social skills**, once again the majority of the students in the three classes agreed that the team members had good communication skills such as actively listening and turn taking. Interestingly, the percentage of students who strongly agreed with the statement is higher in Year 10 (51.5% / 17 students) compared to Year 11 (29% / 9 students) and Year 12 (35.7% / 10 students) (Appendix K - Tables 4, 5 and 6, pp. 257-259). A possible explanation for this is that, at this point, students in Year 10 had mainly experienced the traditional lecture-style method, where students are not allowed to communicate with each other during the lesson, and so the change to CL interaction may have had a greater impact on their perception. On the other hand, students in the following years already had some familiarity with this pattern of classroom interaction and, although they still agreed with the statement, its impact was less noticeable. Similar percentage data can be found for the item related to conflict solving when the team members do not agree with each other. Although the majority of the students in all years either agreed (Year 10: 39.4% / 13 students; Year 11: 51.6% / 16 students; Year 12: 50.0% / 14 students) or strongly agreed (Year 10: 36.4% / 12 students; Year 11: 22.6% / 7 students; Year 12: 28.6% / 8 students) with the statement, the numbers for strongly agree are higher in Year 10 than in the other years (Appendix K - Tables 4, 5 and 6, pp. 257-259). In addition, most students in the three classes indicated that they either agreed (Year 10: 45.5% / 15 students; Year 11: 41.9% / 13 students; Year 12: 46.4% / 13 students) or strongly agreed (Year 10: 27.3% / 9 students; Year 11: 35.5% / 11 students; Year 12: 28.6% / 8 students) that the team members had decision making skills, such as considering all students' perspectives, with no particular percentage increasing or decreasing pattern observed between the years. When it comes to leadership skills, figures show that there is a growing trend in terms of agreement from the initial year to the final: 39.4% (13 students) in Year 10 agreed with the statement; this number grows to 54.8% (17 students) in Year 11; and, when reaching Year 12, although the percentage of those who agreed falls to 32.1% (9 students), the figure for those who strongly agreed grows to 39.3% (11 students) compared to the previous years.

With respect to **group processing**, the percentage of students who agreed or strongly agreed that the team members discussed each group member's helpful and

unhelpful actions in group work is higher for Year 11 (64.6% / 20 students combined) and Year 12 (67.8% / 19 students combined) than for Year 10 (54.6% / 18 students combined) (Appendix K - Tables 4, 5 and 6, pp. 257-259). Similarly, the combined percentages of students in Year 11 (67.8% / 21 students) and Year 12 (64.3% / 18 students) who agreed or strongly agreed that the team members made decisions about the actions that should be continued or changed are higher than those for Year 10 (51.5% / 17 students). A possible explanation for this difference is that all Year 11 and Year 12 teachers who used cooperative learning used group processing at some point in their lessons. However, only one teacher who taught Year 10 did so while the other two teachers in the same year did not do that at all (Section 4.4.4, pp. 140-143).

The interviews with students confirm the results of the questionnaire regarding what students did in group work in the light of the five principles of cooperative learning. For example, S4 (Year 11) explained what students typically do when working in groups in the CL lessons,

Each member receives a separate section of the task that is different from those of his teammates. He works to understand it first, and then he explains his understanding of his respective section to his teammates. If a member has failed to understand his own part of the task, we all help him out to grasp it. Then, we agree on common answers for the tasks-related questions and write them down. In this way, we all cooperate to complete the task and to answer any question that the teacher may later pose to any member of our group..... Sometimes, we think about how we can improve the work of our group, if the teacher asks us to do that.

From S4's description about students' behaviours in group work, some key components of cooperative learning appear. For instance, when S4 mentions that "*He works to understand it first*", he seems to refer to individual accountability, and when he says that "*he explains his understanding of his respective section to his teammates*" he is pointing towards interaction among group members. His statement that other group members help those who could not complete the task "*to grasp it*" and that they "*all cooperate*" relates to positive interdependence. When S4 says that "*we agree on common answers of the tasks related questions*", he is referring to social skills whereas "*to complete the task*" indicates group members' focus on attaining the same goal. He also seems to refer to group processing when he says that "*we think about how we can improve the work of our group*".

4.5.6 Students' challenges of working cooperatively

In the questionnaire, students were also asked to consider the possible challenges and problems posed by learning through CL (Table 4.12).

Table 4.12: Students' perceptions about challenges and difficulties in CL

Questionnaire statements	Year 10 Frequency (%)	Year 11 Frequency (%)	Year 12 Frequency (%)
Some of my team members do not do their shared work	9 (27.3%)	4 (12.9%)	3 (10.7%)
Some of my team members do not participate in team discussion	11 (33.3%)	4 (12.9%)	5 (17.9%)
Cooperative learning leads to too much noise in class	4 (12.1%)	3 (9.7%)	4 (14.3%)
Some of my team members are sometimes absent	8 (24.2%)	7 (22.6%)	9 (32.1%)
Time for team discussions is too short	7 (21.2%)	8 (25.8%)	7 (25.0%)
I am still unfamiliar with the cooperative learning method	12 (36.4%)	8 (25.8%)	6 (21.4%)
The number of students in my group is not appropriate because it is a lot	3 (9.1%)	2 (6.5%)	0 (0.0%)
Some of my team members dominate the group discussion	4 (12.1%)	5 (16.1%)	3 (10.7%)

The questionnaires findings show that the percentage of students in Year 10 (27.3% / 9 students) who indicated that some of their team members did not do their shared work is higher than the figure for Year 11 (12.9% / 4 students) and Year 12 (10.7% / 3 students). Additionally, 33.3% (11 students) in Year 10 agreed that some of their team members did not participate in team discussion compared to only 12.9% (4 students) in Year 11 and 17.9% (5 students) in Year 12. S2 (Year 10) said that this could be solved through *“encouraging and motivating us by all means of incentives, such as marks”*. He also seems to believe that the teacher should *“check students who make noise or do not participate because, when we feel that the teacher watches, we will work hard and participate to prove our abilities”*. Furthermore, S7 (Year 12) commented that *“perhaps, some students are not accustomed to cooperative learning and are still attached to the traditional method”*. Table 4.12 above shows that the percentage of students in the three classes who felt that cooperative learning leads to too much noise in class varies from 9.7% (3 students) to 14.3% (4 students) only.

In addition, the percentage of students in Year 12 (32.1% / 9 students) who pointed out that some of their team members were sometime absent is higher than that for students in Year 10 (24.2% / 8 students) and in Year 11 (22.6% / 7 students) (Table 4.12, above). S8 (Year 12) explained why this is a problem when he said, *“when the group includes an excellent student and weak students, and the excellent student is absent, this affects the group’s work”*. In addition, the questionnaire results show that about one fourth of the students in three classes considered that time for team discussion was too short. S4 (Year 11) mentioned that *“the teacher gives us a few minutes to do the task but we need more time to help each other understand the task questions, so the time is not enough”*. Moreover, the percentage of students in Year 10 (36.4% / 12 students) who indicated that they were still unfamiliar with the cooperative learning method is higher than that for students in Year 11 (25.8% / 8 students) and Year 12 (21.4% / 6 students). S2 (Year 10) said, *“in the primary and secondary schools, I was used to the traditional method. Now, I have been taught by cooperative learning in some subjects for nearly one semester. I am still getting used to it”*.

There was a small percentage of students (Year 10: 9.1% / 3 students; Year 11: 6.5% / 2 students; Year 12: 0%) who mentioned that the group composition was not appropriate because there were too many students in the group (Table 4.12, above). Finally, from 10.7% (3 students) to 16.1% (5 students) of the students in the three classes indicated that some of their team members dominated the group discussion. S6 (Year 11) said, *“sometimes, I get students in the group who want to dominate the discussion and do not give other members a chance to talk. However, sometime, I get students in the group who do not do that and cooperatively work. So, it depends on the group”*.

4.6 Summary

This chapter has presented the qualitative and quantitative findings collected through the interviews, questionnaire and classroom observations, considering both the teachers’ and students’ points of view as well as the researcher’s field notes.

In general, data collected from the teachers indicates that training is a very important aspect for the implementation of CL in their classes because it provides new information and knowledge that affect their beliefs and their practices in the classroom. The data shows that teachers have changed their definition of cooperative learning and their views on the best way of acquiring knowledge, as well as their perception regarding the

responsibility and authority of both teachers and students in the classroom. However, there are some initial challenges that teachers face when they change from lecture-style to CL. Such challenges can lead to resistance to change. Such factors can be the previous long experience with the lecture method, increased workload and the level of the teacher's conviction of the benefit of change. Yet, there are factors that can help overcome these challenges, for example, support from the school principal and colleagues, visiting experienced teachers in other schools and the feedback received from trainers.

The findings suggest that training has an impact on practice when teachers adopt cooperative learning in their lessons. This can happen in the form of changes in their previous lecture-style practice, such as changes in the lesson plans, or adding new teaching procedures and techniques, such as putting students in groups. These particular aspects are further discussed in Chapter 5. Based on the classroom observations and the second round of interviews, the data suggests that teachers understand and implement the five principles of cooperative learning (Johnson & Johnson, 2014) to a quite effective degree in most cases. Although there are individual differences among the teacher-participants regarding the number of principles and the way to implement them, most of them have shown an ability to do that quite effectively.

Teachers' implementation of the CL principles and other teaching practices, such as monitoring, assessing and evaluating, tend to have an impact on students' performance, attitude and interaction in such classes. In general, in the classes observed, students working in groups have provided evidence of positive interdependence among themselves as well as individual responsibility towards their own learning and that of others. Although there are differences among students in the classes, it can be said that the interaction among students as a whole has shown that they ask for and provide help, ask questions, and discuss ideas and information regarding the task. Social skills, such as listening to each other, taking turns and thanking each other, have also been observed. Occasionally, students reflect on their own learning process by indicating what has helped or hindered their work completion in order to improve it in the future. This differs from the kind of behaviours observed with other teachers who used lecture-style where students are not required to actively engage in the lesson.

The findings suggest that the general view of both teachers and students is that they prefer to use CL instead of the lecture method and that the most noticeable reason for this is the perceived academic and social benefits of adopting cooperative learning. In terms of

academic benefits, there is an increased motivation to learn. There is also clear enhanced autonomy and responsibility towards learning, higher levels of understanding of the content and long term retention. Regarding the social benefits, both teachers and students seem to agree that adopting the CL principles leads to a reduction in anxiety, an increase in confidence, and to a positive relationship among students and between students and teachers. The data also suggests that there is a development in students' communicative and social skills.

However, there are some difficulties and challenges that can affect the implementation of CL from both teachers' and students' points of view. Both teachers and students mentioned free-riding, where one or two group members do not fully participate in the group work. Absences can also negatively affect the group work. Students' lack of or few previous experiences with CL and familiarity with its classroom procedures can also negatively impact on the perceptions of cooperative learning.

The most important aspects related to the findings and which help answer the research questions posed in this investigation are further discussed in the following chapter.

Chapter 5: Discussion

5.1 Introduction

This chapter consists of an examination of the findings of this investigation in the light of the literature review. It deals with relevant aspects related to teachers' and students' perceptions of CL and the implementation of cooperative learning, especially considering Johnson and Johnson's five principles, in order to answer the research questions. Although the research questions serve as guides for this examination, the data strongly suggests overlaps between the views and aspects highlighted by the teachers and students and the researcher's own observations in the classroom. For this reason, the discussion conducted in this chapter is presented in themes considering the two major aspects of this study, perceptions and practice, in order to achieve the aims of this investigation and answer the research questions below.

1. What are the perceptions of cooperative learning by participant-teachers who received training on it?
2. Which teaching practices do participant-teachers currently employ when facilitating cooperative learning work in the classroom?
3. What are participant-students' perceptions of the benefits and challenges of cooperative learning?

This chapter starts by mainly addressing Research Question 1 (RQ1), with a discussion of teachers' perceptions of the importance of teacher training and the initial challenges in the process of adopting cooperative learning (CL) and factors helping with it. Then it moves to a discussion of both teachers' and students' perceptions of the advantages and difficulties related to CL implementation (RQ1 and RQ3). The following section is a discussion of practices related to lesson preparation, implementation of the five principles, and the students' behaviours in groups and the effect of teachers' procedures (RQ2). The chapter concludes with a discussion of CL in traditional educational contexts, such as Saudi Arabia, and communities of practice.

5.2 Teachers' and students' perceptions of CL (RQ1 and RQ3)

The findings discussed in this section come from teachers' interviews and students' questionnaire and interviews. However, sometimes the data from classroom observations is used to support students' and teachers' perceptions.

5.2.1 The importance of teacher training

One of the most significant findings of the present study is the importance of pre-service and in-service training in order to implement cooperative learning (Sections 4.3.1, 4.3.2 and 4.3.3, pp. 119-126). Therefore, it is important to give novice teachers the information, knowledge and practical experience with CL before they start their teaching career. These results supports the findings of Taspinar (2007) and Algarfi (2010), who found that pre-service teachers' experiences affect their later teaching practices. Moreover, in the interviews all teachers mentioned that they had been using lecturing-style because in their pre-service training that was the only method presented to them (Section 4.3.1, p. 119). Even teachers (T1, T2, T3 and T7) who had contact with other methods in their pre-service training still did not use cooperative learning because that was not one of the approaches with which they had contact (Section 4.3.1, pp. 119-120). Such findings are in line with McWey et al. (2006), who indicated that most teachers receive pre-service training that focuses on traditional teaching practices and need some additional training to be able to effectively adopt and implement other approaches. Furthermore, these findings confirm Alaqueel's (2013) claim that most pre-service training does not prepare teachers to understand and adopt new teaching methods, which is confirmed by the first round of interviews conducted with the teachers (Section 4.3.1, pp. 119-120).

Although the importance of pre-service training seems to be a consensus, the participants in this study did not have the benefit of experiencing CL in their pre-service, which makes the relevance of in-service training even greater as a way of filling this knowledge gap. Participants claimed in the interviews that the previous in-service training they had received focused on some topics or issues that were not related to teaching methods but instead focused on theoretical aspects, which were not followed by practical considerations that would help them to implement such concepts in the classroom (Section 4.3.1, p. 122). This confirms the views of Alsonble et al. (2008) about the general approach to in-service teacher training in Saudi Arabia and also the findings of Alhejaili (2009), who claims that most Saudi Arabian in-service training does not focus on new teaching and

learning methods but deals with other issues, such as the use of technology and subject knowledge. However, the current in-service training in cooperative learning the participant-teachers in this study received was an exception to the rule above, since it essentially focused on cooperative learning, which is a teaching approach that is still new in the context of Saudi education since the teaching methods adopted typically rely on knowledge transmission and memorisation (Alhaidari, 2006; Almaliki, 2010).

Interview findings indicate that the in-service training in cooperative learning based on Johnson and Johnson's model (Johnson & Johnson, 2014) received by the participants has had an impact on the teachers' knowledge and classroom practices (Section 4.3.1, pp. 120-121). They have benefited from this training programme on changing their classroom methods from lecture-style to cooperative learning because it has provided them with knowledge and understanding of CL, enabling them to implement it in their classes (Section 4.3.1, pp. 120-121). This is in line with the views of a number of researchers who emphasise the importance of in-service training to fill in the gaps in teachers' knowledge and support them to implement CL (Algarfi, 2010; DelliCarpini, 2009). This is also important in order to change classroom behaviours (Roy, 1998), help teachers establish goals, define classroom roles, and understand the differences between group work and cooperative learning (Slavin, 2014).

Moreover, the interview findings (Section 4.3.1, p. 121) show that such understanding and knowledge provided by the in-service training affects teachers' beliefs, which facilitates the implementation of CL, as highlighted by Roehrig and Kruse (2005) as well as Abrami et al. (2004) when discussing the impact of teachers' beliefs on their teaching practices. Data collected from teachers also confirms Mansour's (2008) views that CPD, along with workplace and culture, can possibly change and shape teachers' beliefs.

In addition, the teacher interviews indicate that, before receiving the training on cooperative learning, three of the participant-teachers (T1, T2, and T5) could not differentiate between cooperative learning and group work and therefore provided a definition of CL that was closer to a definition of group work (Section 4.3.2, p. 123). On the other hand, before CL training, none of the other participants were able to provide a definition at all. After attending the training, the definitions teachers provided in the interviews included the concepts of students working together to complete their tasks and achieve their shared goals (Section 4.3.2, p. 123), which is in line with some definitions of

CL provided in the literature (Slavin, 2011; Farzaneh & Nejadansari, 2014). In addition, their definitions (Section 4.3.2, pp. 123-124) included some aspects related to Johnson and Johnson's (2014) five principles of CL, such as positive interdependence and individual accountability. This confirms that CL training is important in changing the participants' perceptions about CL, as highlighted by the different definitions they provided before and after the training.

Furthermore, in the interviews teachers (Section 4.3.2, p. 124) in general reported that before the CL training they tended to view students' knowledge acquisition as dependent on the teacher's effort and input, which denotes a very teacher-centred approach focusing on knowledge transmission (Muijs & Reynolds, 2011; Moore & Hansen, 2012). However, all participants claimed that the training programme changed their views towards a more student-centred approach where knowledge is constructed together in the group and class due to both teachers' and students' efforts (Section 4.3.2, p. 124), which confirms the findings of De Hei et al. (2015). This change in the teachers' perceptions of the process of knowledge acquisition seems to have taken place due to the training. Such changes in the way knowledge is acquired lead to necessary changes in the perceptions related to classroom roles responsibility and authority.

The participant teachers confirmed in the interviews that they used to see their role as being that of a lecturer, who delivers new information to students, while the learners' role was to passively listen to them (Section 4.3.3, p. 125). Accordingly, students were not allowed to talk or participate in class unless the teacher asked them (Section 4.3.3, p. 125). This is in line with Alhaidari (2006) when he discusses the teacher's and students' roles in lecture-style. Participant teachers (Section 4.3.3, pp. 125-126) argued that the training on CL changed this view of their roles and in the interviews described their role as facilitators (Kagan, 2013), and felt that it was part of their responsibility to design a task that provided students with the opportunity to work on it while they monitored and assessed their performance, as previously indicated by Pan and Wu (2013). Therefore, teachers indicated in the interviews (Section 4.3.3, pp. 125-126) that after training they started delegating some responsibility and authority to students so the learners could manage and take a certain level of agency over their own work, as argued by Slavin and Cooper (1999).

In general, the findings of the teachers' interviews (Sections 4.3.1, 4.3.2 and 4.3.3, pp. 119-126) seem to confirm the results of previous investigations in the field that argue

for the importance of training to change or lead to teachers' new understandings and behaviours (Hennessey & Dionigi, 2013). This also agrees with other studies that claim that changes in classroom practice are highly dependent on changes in knowledge and beliefs (Algarfi, 2010; De Hei et al., 2015; Fullan, 2007). One important fact mentioned by the teachers was that the trainers in this particular CL programme delivered their own training sessions using the cooperative approach so they could experience CL themselves as trainees, and this first-hand experience had a considerable impact on their own teaching practice later (Section 4.3.1, p. 122). This is an aspect already mentioned by researchers who argue for the importance of teachers being exposed to new approaches and methodologies in order to be able to adopt and adapt them in their own classrooms (DelliCarpini, 2009; Jolliffe, 2015).

It is important to consider that in this study six of the teachers attended all the formal in-service teacher training sessions, while one teacher (T7) attended just over half of the sessions and another (T8) did not attending the sessions at all but received informal in-service training by being mentored by his colleagues (Section 4.3.1, pp. 120-121). This shows that there were differences in the way these different teachers with different training experiences implemented CL in their classes. T8 was the only one who admitted that the strategies to implement cooperative learning were not clear for him at the beginning (Section 4.3.4, p. 128). He was also the only teacher who said that CL could lead to noise and disruption of the classroom order, leading to complaints from other teachers in nearby classrooms (Section 4.3.3, p. 126). T7 and T8 were the only ones who could not provide a solution for the problem of free-riding, as discussed in Section 2.6.1 (p. 59), while all the other teachers who attended the full course were able to do so (Section 4.3.7, p. 133). In addition to this, the classroom observations in the lessons delivered by these two teachers (T7 and T8) showed lower standards in the implementation of the five principles in comparison with the lessons conducted by the other teachers (Table 4.8, p. 142). This is discussed in more detail later, in the section about classroom practice (Sections 5.3.2, p. 189 and 5.3.3, p. 194).

A very plausible reason for such findings is the fact that T7 and T8 did not benefit from activities conducted during the training programme, such as classroom observation with individualised feedback, follow-up activities or peer observation (Section 4.3.1, pp. 120-121). One of the possible difficulties these teachers faced was that, due to the number of lessons a week (more than 20, Table 4.1, p. 116), they could not organise peer

observation by themselves, which could perhaps have compensated for the missing practical activities performed in the training, which they claim is important in order to implement CL (Section 4.3.1 p. 122). According to Joyce and Showers (2002), peer observation and teachers working with each other are important aspects in order to improve their practices. My argument here is not to say that either formal or informal training is better in order to implement CL. However, I argue that the follow-up activities mentioned above seem to be essential to help teachers make the change from lecture-style to CL more effectively. In addition, the interview findings indicate that formal training can potentially lead to the creation of an informal environment where the teachers who attended the formal training can mentor others who have not participated, as happened to T8 (Section 4.3.1, pp. 121-122). This is important because teachers who may not have the opportunity to attend formal training can still benefit from the experience of others and collaboratively construct knowledge among themselves in their school context, which is a fundamental aspect for the creation of communities of practice (Lave & Wenger, 1991; Wenger, 1998), which is discussed later, in Section 5.4 (p. 197).

5.2.2 Initial challenges and the factors that help overcome them

In Saudi Arabia, the main teaching method adopted in the majority of schools around the country is the lecture-style (Algarfi, 2010; Alhaidari, 2006). However, the Local Department of Education in the city where this investigation took place, following the national guidelines that recommend continuing teacher training to improve the quality of teaching, decided to organise a CPD on cooperative learning as a possible alternative teaching approach. The findings of this study suggest that such change posed some challenges to the teachers not used to this method, especially in the initial phases of the implementation of CL in the school (Section 4.3.4, pp. 127-128). Some of the reactions to change reported by all teachers in this investigation have already been discussed in the literature in the field and they are considered natural reactions to change when people change from something they know to something they do not know (Bovey & Hede, 2001). These reactions need to be considered since they can lead to resistance to change (Fullan, 2007). Although resistance to change has been extensively discussed by educators, there is still a gap in the literature related to teachers' initial reaction to change in traditional teaching contexts, like in Saudi Arabia, and this is even more noticeable when considering the change from lecture-style to cooperative learning.

In the interviews, all teachers who participated in this investigation referred to some challenges in the process of making the transition from lecture-style to CL (Section 4.3.4, pp. 127-128). Firstly, teachers need to be convinced that there is a real need to change from lecture-style to CL and be willing to do that (Section 4.3.4, p. 127). For this reason, it is fundamental that participants in the CPD receive comprehensive information about the new method and feel that they have acquired enough knowledge to allow them to implement it. Otherwise, they are likely to feel afraid and anxious about the change process and resist it (Yılmaz & Kılıçoğlu, 2013). This was mentioned by one of the teachers in this study (T8) (Section 4.3.4, p. 128). This participant did not attend the formal in-service training and, not having a clear mind about the benefits of the change to CL, felt insecure and unconvinced at the beginning about how to implement it (Section 4.3.4, p. 128).

Secondly, another important initial challenge reported by some teachers in the interviews was participants' long previous experience with the lecturing method (Section 4.3.4, p. 127). This result is corroborated by the views of Shannon (2006), who refers to individuals' preference for stability and using teaching methods with which they are familiar as the desire to remain in their 'comfort zone'. Making such transition means that teachers who are used to teaching by lecturing need to adapt or change their classroom practices and may feel insecure about performing tasks they previously felt confident about, such as designing their lesson plans, adapting the materials, controlling the time, managing the students and meeting the lesson aims.

Thirdly, some teachers in the interviews mentioned the difficulties teachers who are new to CL face in handing over authority and delegating responsibility to learners, especially if they have long experience with a teacher-centred approach (Section 4.3.4, p. 128). Such fear of delegating responsibility and authority may come from using lecture-style for a long time and may be a reflection of the centralisation of the Saudi educational system and its philosophical background, as argued by Hamroun (2009). This is an educational system that sees the teacher as the main agent responsible for teaching as well as the main source of knowledge at the centre of the learning process. Changing this way of thinking can be a considerable initial challenge to teachers, and some participants in this investigation mentioned their early concerns that delegating responsibility and authority would result in losing control over the students and consequent disorder and disruptive behaviour in the classroom (Section 4.3.4, p. 128). Moreover, some teachers were not initially convinced that students would be able to take this responsibility and manage their

own learning (Section 4.3.4, p. 128). One teacher (T4), however, mentioned that after implementing CL for a certain time these initial concerns were reduced, and CL actually allowed him more time to manage the class and better assess students' performances (Section 4.3.4, p. 128).

Fourthly, the findings of the interviews suggest that there was a reaction from teachers in the school who did not use CL against the teachers who were trying to implement it (Section 4.3.4, p. 128). At the initial phases of the process, peer disapproval and disbelief can undermine teachers' confidence in the validity of a new method and in their own capacity to implement it (Section 4.3.4, p. 128). Students' own familiarity with the lecture-style method used by other teachers in the school may make those students doubt and feel confused about the new method (Section 4.3.4, p. 128). Working in a traditional and centralised educational environment, such as the one in which this study was carried out, poses a challenge in itself. This indicates the importance of peer support and the creation of a community of practice (Wenger, 1998) that fosters the use of cooperative learning. This aspect is further discussed in Section 5.4 (p. 197).

One final consideration regarding initial challenges to the implementation of CL is the workload the process creates for teachers (Section 4.3.4, p. 128). It involves the need to attend the training, visit other teachers and be observed, which can mean investing a considerable number of hours in the process. Furthermore, since teachers are not familiar with CL, tasks they normally perform as part of their job, such as designing a lesson plan and preparing the lesson (Section 4.3.4, p. 128), become more time consuming and demand more effort (Gillies & Boyle, 2010).

The interview data indicates that there are some factors that can help teachers to **overcome the initial challenges** mentioned above (Section 4.3.5, pp. 129-130). First of all, teachers need considerable support from the school principal and administration (Section 4.3.5, p. 129), which could be both direct and indirect. Support from the school administration is an important factor already mentioned by Davison et al. (2008). Direct support may mean providing time to attend the training and tools to implement CL, as well as incentives, for example, reducing the demand for covering absent teachers' classes, and reducing the number of weekly teaching hours (Section 4.3.5, p. 129). Indirect support may mean providing encouragement and positive feedback (Section 4.3.5, p. 129). Secondly, all teachers in the interviews also stressed the importance of peer support to overcome the

initial challenges of implementing CL (Section 4.3.5, p. 129). This support may come in the form of discussing and sharing ideas and CL good practices, as well as preparing lessons together. Thirdly, observing experienced teachers and seeing how they effectively use CL in their lessons may make teachers new to CL feel confident that with practice they will also be able to do that and be willing to change (Section 4.3.5, p. 129). Finally, follow-up from the trainers can also have a similar positive effect and help teacher to overcome initial resistance to change by helping teachers find solutions to their problems and keeping levels of motivation high (Section 4.3.5, p. 129). Some of these results confirm previous studies on the importance of peer support (Jolliffe, 2015; Joyce & Showers, 2002) and on the benefits of observing experienced practitioners (Sharan, 2010).

Another helpful factor mentioned by the majority of the participant-teachers in the interviews is the importance of training students to use CL (Section 4.3.5, pp. 129-130). If teachers train students who are new to CL, this can be a helpful factor in overcoming the initial challenges because students have long experience with lecture-style and they are not familiar with CL. This is in line with Hennessey and Dionigi (2013) on the importance of training students new to CL. Students may then develop some social skills that will help them to implement CL and contribute to a more learner-centred classroom environment. Interviews also suggest teachers seem to believe that CL needs to be gradually implemented so both teachers and students can develop step-by-step strategies to implement it in the classroom (Section 4.3.5, p. 130).

5.2.3. Advantages of CL: teachers' and students' views

The findings discussed in this section come from teachers' interviews, students' questionnaire and students' interviews. The findings indicated that, after having overcome most of the initial challenges, all teachers (Section 4.3.6, p. 130) and the majority of the students (Table 4.10, p. 154) in this investigation developed positive perceptions of cooperative learning and preferred to use it instead of the lecture-style. Participants argued that CL brought them both academic benefits (Sections 4.3.6, pp. 130-131 and 4.5.2, pp. 157-159) and social benefits (Sections 4.3.6, p. 132 and 4.5.3, pp. 160-162), which corroborates the findings of a number of previous studies (Farzaneh & Nejadansari, 2014; Idowu, 2013; Johnson et al., 2010). All teachers and most students seemed to agree that cooperative learning lessons contributed to the enjoyment of learning since students could actively carry out some research, build up their own knowledge and engage in discussions instead of passively listening to the teacher (Sections 4.3.6, p. 130 and 4.5.3, p. 161).

Teacher's talking was reduced and students could further interact with each other. This also contributed to a more relaxing environment that facilitates learning. The majority of the students in this study also mentioned that they tended to prefer the subjects taught by CL than those taught by lecture-style (Table 4.10, p. 154).

Enjoyment, classroom interaction and active participation in the learning process contribute to the development of a classroom environment, which can be seen as having some of the features that characterise communities of practice, such as active engagement with content, reflection, conflict-solving and collaborative work (Barab & Duffy, 2000). These are similar to the five principles of CL (Johnson & Johnson, 2014) that teachers have been trained to use (Section 4.4.4, pp. 140-144). Implementing the five principles may thus lead to academic and social benefits for students (Johnson et al., 2010) and the development of a learning community (Barton & Tusting, 2005; Hughes et al., 2007; Kimble et al., 2008).

The findings of this study confirm the literature on the academic benefits that CL can provide to students not only from the students' point of view (Section 4.5.2, pp. 157-159) but also from the teachers' (Section 4.3.6, pp. 130-131). One such benefit is increasing motivation as group interaction encourages students to work together and achieve shared goals (Sections 4.3.6, pp. 130-131 and 4.5.2, pp. 158-159). The majority of the students in this study claimed that in the CL lessons they ceased to be passive receivers of the knowledge transmitted by the teacher and instead felt that they had the ability to learn and were responsible for their own learning (Section 4.5.2, pp. 158-159). Similar findings were reported by Pan and Wu (2013), who argue that CL increased their participants' motivation to learn in comparison to traditional lecture instruction due to the interactive and goal-shared nature of the activities performed in class. Shaaban (2006) also found that working in teams where group members feel that their individual contributions are relevant to the group's success resulted in increased motivation to learn.

The data suggests that students need to prepare for the lesson in advance as well as depend on each other to perform the tasks given to them without entirely depending on the teacher to provide information and explanations (Sections 4.3.6, p. 131 and 4.5.2, p. 159). This leads to greater productivity and autonomy, as argued by Johnson and Johnson (2014). Participants' views expressed in this study support the views of Deutsch (1949), who argued that positive interdependence leads to shared efforts and willingness to work with

other individuals to achieve group goals. Johnson and Johnson (2009) operationalised Deutsch's theory and proposed the five principles of cooperative learning, one of which is the principle of as positive interdependence or group goal (Johnson et al., 2010).

The data suggests that engagement with the learning process is also likely to lead to a considerable development of high-order thinking skills and consequent better understanding of the content of the lesson in comparison with the lecture-style lessons where students are not required to actively think about the content (Sections 4.3.6, p. 131 and 4.5.2, p. 157). In turn, this is likely to result in long time retention (Sections 4.3.6, p. 131 and 4.5.2, p. 158), as previously argued by Bukunola and Idowu (2012) and Tran (2014). The findings indicate increased student achievement in comparison with the lecture method (Sections 4.3.6, p. 131 and 4.5.2, p. 159). The results support the argument in favour of CL in comparison to lecture-style regarding achievement proposed by Sarkhouh (2007) and Shaiban (2009). It is important to point out that, unlike Vygotsky's suggestion that learning takes place mainly for the low-level students when in contact with more proficient individuals (Webb & Mastergeorge, 2003), in this study most students seemed to agree that mixing high- and low-ability students in a group improved the learning of all group members (Section 4.5.4, p. 163).

The data indicates that there are two aspects related to the academic benefits of using CL that were mentioned by most students but are not referred to by any of the teachers (Section 4.5.2, p. 158). The first one is related to problem-solving skills. Data from both the questionnaire and the interviews seems to indicate that learners see considerable value in discussing possible answers and solutions for given problems in groups. The opportunity for discussion and interaction also seemed to facilitate concentration on task, which is the second aspect mentioned (Section 4.5.2, p. 158). This confirms the findings of other studies on problem-solving skills (Brown, 2008) and concentration on task (Blatchford et al., 2007); however, extensive input and passive listening lead to lack of engagement and boredom (Pate-Clevenger et al., 2008).

In addition to the academic advantages discussed above, the findings of this study also suggest that all teachers (Section 4.3.6, p. 132) and most students (Section 4.5.3, pp. 160-162) perceive social benefits when using cooperative learning in class. Both groups of participants mentioned enjoyment in learning, reduction in anxiety, increasing self-esteem, and improved interpersonal relationships and communicative skills (Sections 4.3.6, p. 132

and 4.5.3, pp. 160-162). Such findings confirm the results of previous studies conducted in the area of the social benefits of cooperative learning by a number of previous researchers (Brandy, 2013; Bertucci et al., 2010; Cavanagh, 2011; Scherman & Toit, 2008; Tran & Lewis, 2012). Better relationships between students and teachers was a factor mentioned by some teachers only (Section 4.3.6, p. 132), while the development of better conflict-solving skills was mentioned only by students (Section 4.5.3, p. 161). According to Johnson et al. (2010), one the most important principles of implementing cooperative learning is the development of social skills.

Data from the interviews, as well as the classroom observation, suggests that the majority of the teachers trained students in such skills before implementing CL in class by giving specific instructions to guide their social interactions, giving examples of how to communicate with each other in groups, and advice on how to manage conflicts of interest and ideas (Section 4.4.4, pp. 140-144). Students' experience of using cooperative learning for longer periods also seemed to have had a positive impact on their perception of the improvement of both academic and social skills as a whole. This was confirmed by the higher percentages of agreement for some items in the questionnaire in Year 12 and Year 11 than in Year 10 (Sections 4.5.2, pp. 157-159 and 4.5.3, pp. 160-162). The findings of some teachers' interviews suggest that CL has improved students' social skills in class but it could also be argued that there is the potential to transfer such skills to their social relationships outside the school, thus facilitating communication and interaction with family and friends (Section 4.3.6, p. 132) and also with members of other social and cultural groups. I suggest that the traditional lecture-style, which has been an integral part of the Saudi education system, does not promote such important skills for students' personal and professional lives. Therefore, a change towards a teaching approach that promotes better social interaction in society is crucial for the better integration of individuals in different communities as well as the country's presence in a globalised world market.

Finally, it is important to point out that, although the various academic and social skills have been discussed here separately, this was done for the sake of clarity in writing, but they are in fact closely interconnected and in an interdependent relationship (Johnson et al., 2007). As suggested by a number of researchers (Tran & Lewis, 2012), cooperative learning fosters supportive relationships that, in turn, facilitate learning to a higher level than the ones found in competitive and/or individualistic teaching contexts. The

implementation of the five principles of cooperative learning (Johnson & Johnson, 2014) seem to be a very important determinant of teachers' and students' perceptions of their CL learning experience in the context of this study. I argue that some previous research may have failed to identify some of these advantages (Almufadda, 2006; Huddy, 2012) due to the lack of a specific research focus on the implementation of such principles.

5.2.4. Challenges, difficulties and disadvantages at implementation

Although the findings and the discussion above indicate that both teachers' and students' perceptions of cooperative learning are largely positive, the data collected in this study also indicates that there is no simple unanimity, and some participants have expressed less positive views towards CL (Sections 4.3.4, pp. 126-128; 4.3.7, p. 133 and 4.5.6, pp. 168-169).

First of all, the data indicates that, although in different ways, most teachers (Section 4.3.4, p. 127) and some students (Section 4.5.6, p. 169) mentioned that one of the problems with implementing CL is students' long experience with the lecture method. Students are taught by these traditional methods in the elementary and middle school and changing to CL at high school requires efforts from both teachers and students to adapt to new teaching practices, classroom tasks and responsibilities. Data from this study shows that students in Year 10 (taught by CL for less than one semester) were less positive about CL than students in Years 11 and 12 (taught by CL for more than one year) (Table 4.12, p. 168). Although some teachers gave explicit instructions and training on CL to students at the beginning of the process (Sections 4.3.5, p. 129-130 and 4.4.4, p. 141), some students at the beginning still felt uncomfortable with the new approach and resisted engaging with it (Table 4.12, p. 168), as has been previously reported by McWey et al. (2006).

A second challenge mentioned by both groups of participants was covering the curriculum and the time-consuming nature of most CL tasks and activities (Sections 4.3.4, p. 126, 4.5.1, p. 156 and 4.5.6, p. 169). Some teachers emphasised that it was difficult to cover the curriculum established by the Ministry of Education, which is expected to be fully covered during the school term, if they just use CL (Section 4.3.4, p. 126). This is due to a number of factors. First, this curriculum contains a considerable amount of information and content, which in their option requires teachers to adopt the lecture-style to deliver it in their entirety in the available class time, which confirms the findings of Khalifa (2011). A second reason argued by all teachers was that some of the content is far above students'

level of understanding to learn by themselves (Section 4.4.1, pp. 135-136). This led teachers to adopt a mixed approach where part of the content was delivered by lecturing and part by using CL techniques (Table 4.7, p. 136). Both aspects involving the curriculum implementation may form one of the reasons why some students seemed to be unsure or disagree that CL is suitable as a teaching approach for all the school subjects (Table 4.10, p. 154). Some students also mentioned that the time for discussion and task completion is often too short or not long enough (Table 4.12, p. 168), since teachers need to take time from the group interaction to be able to cover the content, as argued by Thanh (2011). In addition to curriculum considerations, some teachers mentioned that preparing CL lesson plans and activities (Section 4.3.7, p. 133) requires more time in comparison with the lecture-style, which is in line with the results of Gillies and Boyle (2010). This is particularly relevant when they need to teach 20 or more different lessons a week of 45 minutes each (Table 4.1, p. 116). Practical aspects of classroom arrangement also had an impact on time since CL teachers need to re-arrange rows of seats (from the traditional teaching style) into group islands at the beginning of their sessions (Section 4.4.3, p. 138).

In addition, the findings of some teachers' interviews indicate that the assessment strategy was also a challenge that a number of teachers faced when they use cooperative learning (Section 4.3.4, pp. 126-127). This prevented teachers from giving marks for cooperative group work (Section 4.4.8, p. 150) which, according to Zuheer (2008) and Johnson et al. (2008), should be given along with individual marks in order to promote individual accountability and positive interdependence among group members. The Saudi Ministry of Education controls and centralises the testing system in the country (MOE, 2015), leaving almost no space for teachers to adopt more cooperative and interactive forms of assessment. Moreover, the philosophy of centralisation of the Saudi system does not only affect teachers' assessment of students' performance but also has an impact on parents who tend to encourage their children to compete with others to achieve higher marks and be better than their peers (Section 4.3.4, p. 127). In addition, some families do not seem to encourage discussion with and/ or between their children, which could negatively affect group work (Section 4.3.4, p. 127). As a result, some students in the interviews mentioned that the competition and the importance of being a high achiever might lead to reduced cooperation between them (Section 4.5.1, p. 155).

Furthermore, the findings from some teachers and students in this investigation indicate that group composition could be a challenge (Sections 4.3.4, p. 126 and 4.5.1, p.

155). Although all teachers tend to acknowledge the importance of heterogeneity in terms of students' academic level performance (Section 4.4.2 p. 138), some teachers (Section 4.3.4, p. 126) and some students (Section 4.5.1, p. 155) in the interviews mentioned that when the majority of group members were weak this had a negative impact on the quality of the discussions, interaction and task completion. This result supports the views of Ballantine and Larres (2007) and Johnson and Johnson (2014) regarding the importance of assigning different abilities in a group in order to promote interaction among group members.

In addition, some students in the interviews indicated the importance of another factor that is related to group composition, which is the relationship between students and their personalities, especially in terms of group discussion domination (Sections 4.5.1, p. 155 and 4.5.6, p. 169). This suggests that, when teachers put students into CL groups, factors such as personality traits need to be considered beyond academic levels. The number of students in each group also needs to be considered. The data shows that teachers tended to start implementing CL groups using pair work and moved towards groups of four (Section 4.4.2, p. 137). However, a few students in this study reported difficulties in adapting to the increasing number of group members (Section 4.5.6, p. 169), so special consideration should be given by the teachers when they set group numbers in the early stages of the implementation.

All teachers (Section 4.3.7. p. 133) and some students (Table 4.12, p. 168) mentioned free-riding as one of the disadvantages of implementing cooperative learning. Free-riding is a classroom behaviour closely associated with the issue of group composition since the number of students in a group may be a fundamental factor in determining the engagement or disengagement of all group members with the task, as argued by Davies (2009) and Kapp (2009). I also argue that the main factor that leads to free-riding is teachers' classroom procedures. Teachers who attended the full formal CL training had the ability to solve this problem by using random selection of group members to present the group work to the whole class (Section 4.3.7, p. 133). However, the two teachers (T7 and T8) who did not attend the whole CL training programme could not provide a solution to this problem (Section 4.3.7, p. 133). There were also differences between them and the other teachers who attended the whole programme in terms of monitoring and assessment of group work (Sections 4.4.6, pp. 148-149 and 4.4.8, pp. 150-153). However, none of the teachers in this study used material rewards (Section 4.4.7, pp. 149-150), although,

according to Johnson and Johnson (2008b), using rewards can promote positive interdependence and individual accountability and thus help avoid free-riding.

Finally, the majority of the teachers in the interviews mentioned that the large class size could be a problem when implementing cooperative learning because it creates difficulties to move inside the classroom space (Section 4.3.4, p. 126), an issue already identified by Almulla (2012). A few students (Table 4.12, p. 168) mentioned that cooperative learning could lead to considerable amounts of noise in the class. This could be because these were large classes and when many students are moving around and working in groups this generates considerable noise. This factor was also mentioned by the teacher (T8) who did not attend the full CL training programme (Section 4.3.3, p. 126), which suggests that once again such difficulties can be overcome as long as teachers adopt suitable classroom procedures. Most teachers in this study, however, argued that CL helped them to manage and control the class (Section 4.3.3, p. 126), which is in disagreement with the findings of some previous studies (Gilbert, 2007; Thanh, 2011).

5.3 Classroom practices (RQ2)

The findings discussed in this section come from the classroom observations and the data collected from the second round of interviews conducted with the participant-teachers after the observations. The exception is the section regarding students' behaviours in groups where the data comes from students' questionnaire, interviews and classroom observations. The data collected in this study suggests that the CL training teachers received has had an impact on their teaching practices by changing the old practices to new ones and/or by leading teachers to add new classroom techniques and procedures to their teaching repertoire (Sections from 4.4.1 to 4.4.8, pp. 134-153). In this section, I discuss teachers' practices related to lesson preparation, such as lesson plan and group composition, implementation of the five principles, and the students' behaviours in groups and the effect of teachers' procedures.

5.3.1. Lesson plan and group composition

The data indicates that most teachers considered academic and social objectives when they prepared for CL lessons and this seems different from what they used to do before when using lecture-style (Section 4.4.1, pp. 134-135). This is in line with Johnson et al. (2008), who emphasise the importance of including both academic and social objectives in the lesson plan. Some teachers said that previously they tended to focus only on academic

objectives; however, the training on the five principles of CL made them realise the importance of the development of social skills for students in order to communicate and interact with others in the group (Section 4.4.4, p. 141). This confirms previous studies (Johnson et al., 2010; Gillies & Boyle, 2010) that emphasise the importance of social skills to enhance students' contribution in the groups. Consequently, a change in focus and giving importance to social skills in addition to the academic became a concern when most teachers prepared their lessons (Section 4.4.1, pp. 134-135). On the other hand, data also shows that, when teachers do not receive comprehensive training, as was the case for T8 (Section 4.3.1, pp. 120-121), they may fail to see the importance of such social skills (Sections 4.4.1, p. 135 and 4.4.4, p. 143). This suggests that, in order to make more profound changes in their teaching approach, teachers may need the benefit of trainers' feedback and support from experienced colleagues as well as enough available time to discuss their views and practices with experienced trainers and colleagues and to observe others using CL in class. This may be one of the reasons why T8 was the only participant-teacher to state that CL did not help to control the class and led to noise (Section 4.3.3, p. 126), since he neither focused on social skills nor trained his students to use them (Table 4.8, p. 142).

Besides changes in their practice, data shows that teachers also added new techniques to their range of classroom procedures. All participant-teachers in the interviews described the process of designing and preparing the group tasks to be used in class (Section 4.4.1, p. 135). Their comments suggest that useful CL lessons require considerable thought from the teacher at the lesson preparation stage, especially regarding the learning objectives and the time available in the lesson (Section 4.4.1, p. 135). This result confirms the research conducted by Mastropieri et al. (2007), which shows that CL requires careful planning from teachers and thoughtful implementation of what has been planned. This need to consider the time is particularly relevant for teachers working with CL in this context since they need to find ways of reaching a balance between giving students enough time to carry out the CL tasks while still covering the curriculum (Section 4.4.1, p. 136). This, as the interviews and observations showed, caused teachers to adopt a mixed approach where both CL and lecture-style may co-exist in lessons (Section 4.4.1, pp. 135-137).

Furthermore, the data indicates that all teachers (Section 4.4.2, p. 137) and most students (Section 4.5.4, p. 164) in this study agreed that the number of students in the group

should be between two and four in order to maximise participation, facilitate interaction, promote individual accountability and avoid free-riding. This is in line with Johnson et al. (2010), but contrasts with Oakley et al. (2004), who mentioned that groups could have up to five students. Assigning roles to students, in the opinion of all teachers (Section 4.4.2, p. 138) and most students (Section 4.5.4, p. 162), can also contribute such individual accountability and help organise group work (Gillies, 2003a; Johnson & Johnson, 2014). All teachers (Section 4.4.2, p. 138) and most students (Section 4.5.4, p. 163) agreed that groups should be heterogeneous in terms of students' academic level as this helps achieve task completion and promote interaction between students, as argued by Ballantine and Larres (2007) and Gillies (2003b), as well as learning for both high and low achievers, as suggested by Piaget (Webb & Mastergeorge 2003). However, considering group composition in terms of numbers and academic level at the preparation stage is not enough; as mentioned before (Section 5.2.4, pp. 185-186), teachers also have to consider the personal relationships among group members. Such personal relationships in the group can have a considerable impact on students' behaviours in the group regarding individual accountability and interaction. Group composition is therefore an aspect that requires careful consideration by the teacher when designing and preparing a CL lesson. Such considerations were new for teachers who previously were only trained to use lecture-style; in this way, dividing and organising students into groups was a new technique that teachers needed to learn and add to their classroom practices.

All these aspects show that CL teachers need much more training and to devote more time to thinking about the lesson design and organisation before entering the classroom in order to deliver an effective lesson than what is required from teachers using lecture-style. Such thinking process, however, should not be limited to lesson plans and group composition but take into consideration ways of promoting the five principles of CL, as is discussed next.

5.3.2. Implementation of the five principles of CL

The data shows that all teachers at the beginning of the lesson put students facing each other in the groups because such an arrangement is important to facilitate interaction and communication which then helps develop students' social skills and their interpersonal relationships in the groups (Section 4.4.3, pp. 138-139), as suggested by previous studies (Johnson et al., 2010; Quattrin, 2007). Some teachers in the interview mentioned that seating arrangement changes from rows, in the lecture-style, to groups in the CL lesson

(Section 4.4.3, p. 139). This is considered to be a positive factor because students who sit at the back or in the corners of the classroom tend to not interact and participate in class as much as others sitting in a more central position (Section 4.4.3, p. 139). With the cooperative learning and the group arrangement this ceased to be an issue. However, at the beginning of most of the lessons observed, the students' desks were arranged in rows facing the whiteboard, which forced the CL teacher to spend class time rearranging the seating into a grouping layout more suitable for cooperative learning (Section 4.4.3, p. 139). The aspects mentioned above show that teachers understand that the implementation of the five principles depends on a combination of various factors affecting the lesson. Furthermore, all teachers mentioned that it is important to explain the tasks to the students and the criteria required to successfully complete them, which can impact on students working in groups and on their interaction, helping them to finish the tasks (Section 4.4.3, pp. 139-140). These results corroborate the findings of previous studies (Gilbert, 2007; Johnson et al., 2008).

The findings of this investigation show that the vast majority of teachers considered the five principles of CL in their classrooms (Johnson & Johnson, 2014), with the exception of T7, who considered four principles, and T8, who considered only three of them (Section 4.4.4, pp. 140-144). Furthermore, the findings indicate that all teachers considered the three principles that are related to academic performance – positive interdependence, individual accountability and promotive interaction – in each of the observed lessons. However, the two principles related to team function – social skills and group processing – were not observed in every observed lesson for all teachers, except T6 and T7, who taught students new to CL in Year 10. These two teachers focused on social skills in every lesson but the same did not happen in relation to group processing (Table 4.8, p. 142). I argue that the findings indicate that there are three main factors that affect teachers' implementation of the five principles and the ways they promote them: teachers' knowledge and understanding of the five principles, students' familiarity and experience with CL, and limited lesson time (Section 4.4.4, pp. 140-144).

The first factor may be teachers' knowledge and understanding of the five principles that they gained from the training programme. In terms of **positive interdependence**, all teachers in the interviews (Section 4.4.4, p. 140) indicated that it is important for students help and rely on each other to complete the task and achieve the shared goals, as suggested by Johnson et al. (2010). Additionally, the strategies that the

teachers followed to promote this principle was by assigning roles to group members and designing lessons where there was resource interdependence (Table 4.9, p. 144). However, Johnson and Johnson (2014) recommend using additional strategies to increase positive interdependence such as positive reward interdependence and identity interdependence. In terms of **individual accountability**, all teachers in the interviews (Section 4.4.4, p. 140) indicated that each member in the group has the responsibility to learn on his own as well as a responsibility for the other group members' learning, as argued by Johnson and Johnson (2014) and Slavin (2011). Teachers who attended the full CL training programme adopted the strategies suggested by Johnson and Johnson (2014) by explaining their responsibilities to group members and by using random selection when asking students to answer questions (Section 4.4.4, p. 140). However, the teachers who did not attend the full training programme (T7 and T8) had their range of strategies limited. Although they explained to students their responsibilities when carrying out group work, they did not use random selection and instead assigned a speaker to report the results of the group work to the whole class (Sections 4.4.4, p. 140 and 4.4.8, p. 150). This is one of the indications of the importance of the training to provide teachers with the knowledge and strategies to implement the five principles. As for **promotive interaction**, the data indicates that all teachers now seem to perceive the importance of this principle and its effect on students' understanding and performance (Section 4.4.4, p. 141), while the first round of interviews suggested that before the training they did not possess this kind of knowledge (Sections 4.3.2, pp. 123-124 and 4.3.3, pp. 125-126). This result supports the view of Gillies and Khan (2008), who emphasise the importance of team interaction and its effect on students' learning. The data (Section 4.4.4, p. 140) indicates that the teachers used verbal reinforcement to promote interaction among students in the groups, as suggested by Kagan and Kagan (2009).

In terms of **social skills**, the data indicates that the majority of teachers (Section 4.4.4, p. 141) considered the importance of these skills and their effect on group work, which is in line with Johnson and Johnson (2014). In the observed lessons, teachers could be seen teaching social skills to students new to CL but, if students were used to CL methods, the teachers only wrote the group interaction rules on the board to remind them (Section 4.4.8, pp. 150-153). This finding supports the views of Gillies and Boyle (2010) regarding the importance of teaching the social skills to students who are new to CL. However, T8 (Table 4.8, p. 142) did not consider the social skills in any of his observed

classes. When he was asked about that, he said, “*Teaching social skills is not my job*” (Section 4.4.4., p. 143). This indicates that this teacher did not have the knowledge and the understanding of the importance of these skills for group work. Such lack of understanding seems to affect his belief about the relevance of social skills and his role in implementing them. One of the possible reason for this is that the only time this teacher had to encounter CL principles and techniques was by discussing them with his colleagues during break times (Section 4.3.1, p. 122). This limited time has probably led this teacher to focus on aspects of CL that he considered more important, such as the academic skills. It is not surprising perhaps that he has put more emphasis on academic than on social skills since his teaching and cultural background may encourage this view, as will be discussed in Section 5.4 (p. 197). Moreover, he did not benefit from feedback from his colleagues on his classroom practice (Section 4.3.1, pp. 120-121).

In relation to **group processing**, the majority of teachers (Section 4.4.4, p. 141) considered its importance by asking student in groups at the end of some lessons to reflect on their group work to decide on the actions that helped them and continue using them in the future, or discontinue using them if they were not helpful, as suggested by Johnson and Johnson (2008b). However, T7 and T8 did not consider this principle in any of their observed lessons (Table 4.8, p. 142). When asked about this, T7 said he had no knowledge of group processing (Section 4.4.4, p. 143). As happened with the social skills discussed above, such an area is new for these teachers and the lack of feedback on their classroom implementation and discussion with their colleagues and training instructor may have affected their understanding of the importance of group processing in CL lessons.

The second factor impacting on teachers’ implementation of the five principles and the ways to promote them is students’ familiarity and experience with CL. The data shows that even teachers who attended the full training programme and implemented group processing in their lessons did not do it in every lesson observed (Table 4.8, p. 142). When T4 was asked why did not ask students to reflect on their work in some of his lessons, he said that he believed his students could manage their work and interaction without his intervention because they had been using CL for more than one year and were therefore familiar with it (Section 4.4.4, pp. 142-143). The same is true for the teachers’ implementation of social skills, except T6 and T7, who implemented them in every observed lesson in Year 10 where students were new to CL (Table 4.8, p. 142). When T1 was asked about this, he argued that he believed teachers need to teach social skills to

students who are new to CL but that there was no such need if students were familiar with CL and had experience of using it (Section 4.4.4, p. 142). The assignment of roles to students in order to promote positive interdependence was not observed in every lesson taught by T3 and T5, in spite of the fact that they mentioned using it in the interview (Section 4.4.4, p. 143). When they were asked about this inconsistency, they answered that this role assignment was no longer necessary in Years 11 and 12 since the students had been using CL for at least one year and were capable of managing their task without the teacher assigning specific roles (Section 4.4.2, p. 138). All this suggests that, in addition to the teacher's knowledge, students' knowledge and experience also play an important part in the successful implementation of CL in the classroom. This also points towards the importance of consciously training students and consistently implementing the five principles in the first year they are using CL in order to help students internalise these principles and use them in their future learning.

The third factor that affects teachers' implementation of the five principles is limited lesson time. The data indicates that time constraints were another reason why teachers (T1 to T6) did not implement group processing in every observed lesson (Table 4.8, p. 142). When T2 was asked about this, he said that in some lessons there was not enough time for students to complete the task and reflect on it afterwards (Section 4.4.4, p. 143). This shows again that, when teachers need to make choices related to time, they prioritise the principles that relate to academic performance more than the principles that relate to group function.

To conclude, CL training seems to be important in order to provide teachers with new knowledge and classroom strategies to be able to change their previous practices, such as setting the seating arrangement; or add new strategies to implement the five principles, such as assigning group roles. Furthermore, based on what teachers mentioned about plan and lesson preparation (Section 4.4.1, pp. 134-137) as well as the classroom observations (Section 4.4.4, pp. 140-144), the techniques these teachers have been using in their classroom to implement CL are called 'Learning Together' (Johnson et al., 1991). This technique considers the five principles and is not related to a specific subject (Murphy et al., 2005). It should be mentioned that the teacher training could include other techniques as well, such as Student-Teams-Achievement Divisions (STAD) and the jigsaw technique (Slavin, 1995), and teachers should be allowed to decide what they think is more suitable for their subject and will better promote their own students' learning. However, the results

of the questionnaire indicate that the majority of students in this investigation are satisfied with the procedures and the materials their teachers use and think those are suitable for them (Section 4.5.4, p. 162).

5.3.3 Students' behaviours in groups and the effect of teachers' procedures

Students' behaviours in groups (interaction, collaboration and social skills) were considered in the light of the five principles (Johnson & Johnson, 2014) when analysing the data collected through the student interviews, the questionnaire (Section 4.5.5, pp. 164-167) and the classroom observation (Section 4.4.5, pp. 144-147). Some of the main factors that affect students' behaviour seemed to be the teachers' procedures and actions in the classroom as well as the students' familiarity and experience with CL.

In general, the data (Sections 4.4.5, p. 145 and 4.5.5, p. 164-165) indicates that positive attitudes and behaviour tend to happen when students work cooperatively towards the shared goals that are determined by the teacher and help each other to complete the task (positive interdependence), in agreement with Johnson et al. (2010). Moreover, in all Years (10, 11 and 12) (Sections 4.4.5, p.145 and 4.5.5, pp. 165-166), students in groups usually did their share of group work assigned by the teachers, learnt on their own and helped other group members to learn the content (individual accountability), which is in line with previous studies (Johnson & Johnson, 2014; Slavin, 2011). Students in groups (Sections 4.4.5, p. 146 and 4.5.5, p. 165), also usually discussed the content, interacted with each other, and provided to and received explanation from their peers related to the content, which are considered to be important to the understanding of the subject and the student learning process (promotive interaction), as argued by Gillies and Khan (2008). In addition, the students in the groups in all years (Sections 4.4.5, p. 146 and 4.5.5, p. 166) generally showed the ability to interact in a polite way with the others, such as thanking the previous group for their answer, agreeing on the same answers, actively listening, taking turns and keeping a low voice when speaking, all of which are considered to be important to group work and interaction (social skills) (Johnson & Johnson, 2014). Finally, students (Sections 4.4.5, p. 147 and 4.5.5, p. 166) generally reflected on their work and were able to differentiate between the actions that helped and those that did not help them with their group work (group processing), as suggested by Johnson and Johnson (2008b). However, students did not reflect on their group work unless the teachers asked them to do so (Section 4.4.5, p. 147).

On the other hand, based on the questionnaire and student interview data, we can see that a few students in all classes and across the years did not seem to agree that the positive behaviours leading to the implementation of the five principles mentioned above often happened in their class (Section 4.5.5, pp. 164-167). The findings indicate that all teachers use two ways of promoting positive interdependence among students, which are resource interdependence and assigning roles (Table 4.9, p. 144). However, Johnson and Johnson (2014) mention that using more ways to promote it, such as positive rewards and identity interdependence, leads to more positive interdependence and individual accountability among students. The use of these other ways was not, however, observed due to financial and institutional constraints, as can be seen from the data presented in Section 4.4.7 (p. 149) and Section 4.4.8 (p. 150). The fact that the training did not focus on other techniques to promote positive interdependence may also have contributed to that, which again attests to the importance of training. Furthermore, the factors that teachers took into consideration when putting students into groups also had an impact on students' behaviour (Sections 4.4.2, pp. 137-138 and Section 4.5.1, p. 155). This suggests that considering relationships in the group are crucial to achieve group interaction and good behaviour in addition to considerations of group size and student academic level.

The findings of classroom observations indicate that some group members in Year 10, with T7 and T8, showed, in general, less proficiency in all five principles in some lessons (Section 4.4.5, pp. 144-147). This contrasted with what happened in the lessons delivered by T6, who taught the same class to the same students. This was also different from what was observed in other lessons delivered by other teachers.

Some of the factors that affected those students' behaviour were T7 and T8's procedures in relation to monitoring (Section 4.4.6, pp. 148-149), evaluation of students' learning (Section 4.4.8, pp. 150-153) and implementation of the five principles (Table 4.8, p. 142). T7 and T8 generally did not monitor students while they were working in groups, and T7 was observed taking notes and apparently doing other work while students were engaged in group activity (Section 4.4.6, p. 149). T8 also used classroom time to mark students' work (Section 4.4.6, p. 149). This shows that, in order to achieve good classroom behaviour and engagement with the CL activities, teachers need to watch and observe students during their group work as well as observe their interactive performance and use of target social skills, as identified by previous studies (Johnson et al., 2008; Yi & LuXi, 2012). Johnson and Johnson (2014) indicate that when teachers effectively monitor

students they tend to perform their roles and display the behaviours expected from them. It needs to be mentioned, however, that the act of monitoring differs from lecture-style to CL, and sitting in front of the class to observe the class as a whole is not enough; teachers need to constantly walk among groups and intervene when necessary, as mentioned by some teachers in the interviews (Section 4.4.6, p. 148).

The data further indicates that T7 and T8 also had different procedures related to evaluating students' learning (assessment) after completing the task (Section 4.4.8, p. 150). Most participant-teachers used random selection of group members to present group work (Section 4.4.8, pp. 150-151), which is understood to lead to more positive interdependence and individual accountability (Johnson & Johnson, 2014). In contrast with this practice, T7 and T8 selected one student from each group to report on the task in advance of the group work, so all group members already knew who was going to present at the end and this led to less cooperation and sense of responsibility towards the group work (Section 4.4.8, p. 151). This was emphasised by some students who mentioned that knowing they could be randomly selected led to more commitment and participation in the group (Section 4.5.4, p. 163). In addition, the data (Section 4.4.8, p. 150) indicates that most teachers gave feedback related to students' performance and their commitment to social skills, as argued by Yi and LuXi (2012). However, T8 did not give feedback related to social skills and only provided feedback on students' academic performance (Section 4.4.8, p. 152). Generally, some of the teachers in the interviews mentioned that their evaluation and assessment of students' learning is different in cooperative learning compared to when using lecture-style, saying that CL gives them more time to consider students' performance as a whole (Section 4.4.8, p. 152).

The data shows that in relation to promotive interaction T7 and T8 did not differ from the others (Section 4.4.4, p. 141). All participant-teachers, including these two teachers, used the same strategy to promote interaction among students in the groups (Table 4.9, p. 144), which was verbal reinforcement to students when they were engaging in class work on a team task, as suggested by Kagan and Kagan (2009). However, there were some groups in Year 10 taught by T7 and T8 where less interaction was observed in comparison with other teachers, including T6, who taught the same students with the same class (Section 4.4.5, p. 146). A possible reason for this is that there is a relationship between positive interdependence, individual accountability and promotive interaction. If the positive interdependence and individual accountability are promoted well among students,

this can lead to higher promotive interaction, which results in achieving the shared goals and leaning of the lesson content. The opposite also seems to be true. The observations thus suggest that these three principles are closely related to students' behaviour in class, and it can be said that the same applies to all five principles and their interrelationship. As discussed in relation to teachers' implementation of the five principles (Section 5.3.2, pp. 189-194), the extent to which teachers adopt them seemed to affect students' behaviours in group. The data indicates that students in the lessons delivered by T7 and T8 did not reflect on their work since these teachers did not implement the principle of group processing, which was however observed in some lessons delivered by T6 to the same group, because he asked students to do that (Section 4.4.5, p. 147). Likewise, students in Year 10 with T8 rarely exhibited social skills since the teacher did not remind or ask them to do so, which contrasted with their behaviour in the lessons taught by T6 and T7 (Section 4.4.5, pp. 146-147).

In addition, students' lack of familiarity and experience with cooperative learning also seem to have affected their classroom behaviour (Tables 4.4, p. 118 and 4.12, p. 168; Section 4.5.1, p. 155). The questionnaire findings show that, in addition to the teachers' procedures, students' acquaintance with and understanding of CL can affect students' behaviour in group (Section 4.5.5, pp. 164-167). The percentage of students in Years 11 and 12 who agreed that some positive behaviours can be found in class is higher than the percentage of students with such a positive perception in Year 10 (Section 4.5.5, pp. 164-167). As discussed above, this is possibly due to the former's greater familiarity with the CL procedures since they had been taught by CL for more than one year while students in Year 10 had less than one semester of experience with cooperative learning (Table 4.4, p. 118).

5.4 CL in traditional educational contexts and communities of practice

The education system (i.e. the teacher education and training programme, curricular materials, and the methods of teaching and learning) in Saudi Arabia has not changed for many years and school regulations have been basically the same for more than 25 years (Alsayegh, 2007). The Ministry of Education's focus on centralisation may be the cause of the current lack of changes (Hamroun, 2009). This educational system in Saudi Arabia faces many challenges (Alsayegh, 2007). For example, the students who graduate from schools and universities do not generally meet the needs of the job market, while teachers

are still mostly trained to use traditional teaching methods (lecture-style) (Section 4.3.1, pp. 119-120). The teachers still tend to focus on students' academic performance and rely on transferring knowledge to students. The students usually work individually or competitively in order to learn for tests and examinations (Alhaidari, 2006). However, using traditional teaching methods and theories is no longer enough to provide teachers with important tools to support their students and does not seem to be enough to prepare students for real-life, future professional performance as well as to face challenges and changes of international society (Alsayegh, 2007).

Based on the findings of this study, I argue that implementing cooperative learning in Saudi classes plays an essential role in changing Saudi teachers' classes from educator-centred learning to student-centred learning (Section 4.3.3, pp. 125-126). Students can learn about cooperating with each other, having positive interdependence to learn lesson content, and having some responsibility and authority in the class instead of relying on the teacher as the only responsible individual in the class (Sections 4.4.4, pp. 140-144 and 4.4.5, pp. 144-147). Training teachers on CL and implementing it with students may also have some positive impact on teachers' knowledge, beliefs and practices (Section 4.3.1, pp. 119-122). Therefore, teachers will not only focus on students' academic performance but also on the social aspects of learning (Section 4.4.1, pp. 134-135). This may help improve students' learning academically and socially (Sections 4.3.6, pp. 130-132; 4.5.2, pp. 157-159 and 4.5.3, pp. 160-162). In addition, the students may gain skills needed nowadays and promote lifelong learning such as problem solving, critical thinking, collaboration, motivation, effective communication and learning to learn. According to Pellegrino and Hilton (2012), these skills are essential for students to succeed in education, work and other areas of adult responsibility in the twenty-first century. Additionally, the development of creative and critical thinking skills can be promoted through activities that foster interdependence and students' engagement in cooperative situations (Svalberg, 2012).

Cooperative learning training and implementation of it in other Saudi schools over the long term could generally improve the quality of education and learning in such a traditional educational context and Saudi society as a whole could benefit from it. This can effectively happen when the desire for change comes from two different ways: top-down (educational authorities) and bottom-up (teachers – students- school management) (Guri-Rosenblit, 2002), as in the case of the present study (Sections 1.4.5, pp. 23-27 and 4.3.5, pp. 129-130).

Moreover, I argue that CL training (professional development of teachers) and its implementation in a traditional educational context, such as the Saudi context, could create some characteristics of communities of practices, as claimed by Lave and Wenger (1991) and Wenger (2011). This can be seen with participant-teachers who received training on CL which could help them improve their teaching methods, develop their knowledge and implement CL as a new approach, and shape their identities in a professional community of practice. In addition, it could also lead to the creation of communities of practices, which usually emerge naturally among peers (Lave & Wenger, 1991; Wenger, 1998), or communities of learning (Busher et al., 2014), which usually emerge intentionally and include both teachers and students in an unequal power relationship. In communities of learning, both CL teachers and their students could help each other with their lifelong learning process.

In relation to the teachers, the in-service training in CL that was established by the Local Department of Education is considered to be an institutional community of practice, or set-up communities of practice that tend to work cooperatively since their organisation and activities depend on well-defined and organised tasks (Section 1.4.5, pp. 23-27), as suggested by Busher et al. (2014). This community created a formal opportunity for learning to be provided for teachers to improve their knowledge and understanding of CL and the implications of adopting it as the teaching approach, as identified by the results of this study (Sections 4.3.1, pp. 119-122; 4.3.2, pp. 123-124 and 4.3.3, pp. 125-126). This can be seen as a professional learning community because it has the three characteristics of CoP: domain, community and practice, as suggested by Wenger (2011).

In terms of the **domain** of CL, the training programme created a common domain that focused on cooperative learning as a new teaching method. Most of the participant-teachers agreed to attend this training programme in order to improve their current teaching methods, acquire new knowledge and improve their teaching practices (Sections 1.4.5, pp. 23-27 and 4.3.1, pp. 119-121). This shows that these teachers had shared goals and reasons for participating in the training that was organised by the Local Department of Education (Section 1.4.5, p. 23). This may make them somehow ‘different’ from other teachers in the same school. Another aspect related to the domain is that the trainers used CL techniques with the trainee teachers themselves, which gave participant-teachers a shared knowledge and experience of using CL themselves, as mentioned by teachers in the interviews (Section 4.3.1, p. 122). This fact seems to have helped these teachers engage practically

which the purposes that were established by the trainers, also helping them address individual gaps in their knowledge of CL and feel comfortable discussing issues in cooperative groups. This indicates that teachers in these training sessions worked, interacted and built experience and knowledge about CL in a collaborative and cooperative culture, which is one of the most important characteristics of CoP, as highlighted by Busher et al. (2014). They have built a special culture, which is another factor that makes them ‘different’ from other teachers in the institution, since they know and implement CL while others still use lecture-style, thus creating a separate CoP inside the school.

As for the **community** aspect in Wenger’s (2011) characterisation, in pursuing their interest in their domain, which is constructing knowledge of CL and implementing it in their classes, a supportive community of CL teachers emerged from the training sessions (Section 1.4.5, pp. 23-27). The majority of teachers regularly attended the training sessions (Section 4.3.1, pp. 119-120), which included information about CL and its implementation, such as definition, the difference between CL and lecture-style, the five principles of CL, and teachers’ and students’ roles in the CL classroom (Tables 1.3 and 1.4, pp. 25-26). In addition, they attended some activities related to CL with their trainers (Sections 1.4.5, p. 24 and 4.3.5, pp. 129-130). The teachers interacted with each other and discussed the issues above in a cooperative environment (Section 4.3.5, p. 129). In the interviews, they reflected positively on such involvement, saying that it helped them to gain experience of and learn about CL (Section 4.3.1, pp. 119-121). They also reported that they received both direct and indirect support from the school principal and administration (Section 4.3.5, p. 129). All these factors together helped create a community of CL teachers and a mini-culture inside the school which differentiates them from other teachers using more traditional teaching methods and who did not have the opportunity to attend the CL training. This is in line with Mittendorf (2005, p.300), who argued that members of a community should develop “their own mini-culture consisting of own practice, routines, rituals, symbols, stories and histories”.

The third characteristic of CoP is shared **practice**. The findings of the interviews suggest that the shared practice that happened during the CL training included teachers sharing of classroom experiences and professional stories or problems regarding CL (Section 4.3.5, pp. 129-130). Teachers worked closely with each other to plan for the next CL lesson, visited other teachers who had experience with CL, visited each other’s classes, and received peer feedback to each other CL practices (Section 4.3.5, p. 129).

One of the most important aspect of CoP is the “reproduction cycle”, which is their ability to produce new members who “engage in mature practice with near peers and exemplars of mature practice” who in turn also become members of this community (Barab & Duffy, 2000, p.37). This was the case with T8, who did not attend the CL training programme. He later had informal meetings with his colleagues who had attended it and learnt about CL principles and practices from them, therefore becoming a new member of the CL teachers’ community (Section 4.3.1, pp. 120-121). This shows that the CL CoP formed after the training has the ability to enable the teacher to build mutually interdependent relationships with others, engage new members and help him to improve his knowledge and change his identity from a teacher who used lecture-style to a teacher who uses CL. What happened to T8 is considered to be an informal learning opportunity. My findings are different from some other studies (Czerniawski, 2013; Lipowski et al., 2011) that indicate that informal learning opportunities could be better and more effective than formal ones in professional learning communities to promote understanding of professional teaching. I argue that formal learning opportunities with the trainer may lead to the creation of informal learning opportunities that could happen naturally and both could complement each other to support professional development, as happens in this research context (Section, 4.3.1, pp. 121-122). In addition, professional learning communities can be seen as a bridge connecting formal and informal learning in order to help teachers to benefit from both. Emerging communities of practice with such characteristics can thus help their members to gain knowledge and experience about CL and its implementation in their classes. This can happen (Section 4.3.5, p. 129) when discussing and interacting with more competent others, as claimed by Vygotsky (1978), such as the trainers and instructors and/or experienced teachers. This can also happen (Section 4.3.5, p. 129) with interaction with peers at the same level by sharing views, planning lessons together and receiving peer feedback, as argued by Lave and Wenger (1991).

The implementation of the five principles of CL in this context also created a community with some of the characteristics of a community of learning between the students and their CL teacher. The characteristic of such a learning community is similar to the five principles set by Johnson and Johnson (2014). The data indicates that developing such a supportive learning community among students and the teacher in the class can lead to active engagement with the content, reflection, conflict-solving and cooperative work (Section 4.4.5, pp. 144-147). According to other studies (Barab & Duffy, 2000; James et

al., 2015), these aspects are considered to be the most importance characteristics of a community of learning. Although the five principles of CL and CoP come from two different theoretical understandings, they actually have some correspondence to each other.

The data indicates that this kind of community is considered intentionally constructed by CL teachers who contribute to support the learning community by structuring students' learning experience through designing the cooperative classroom tasks (Section 4.4.1, p. 135). This also supports the results relating to the teacher changing his role from a lecturer who delivers information to students to a facilitator who provides help if students need it when carrying out the CL activities (Section 4.3.3, pp. 125-126). Teachers also delegate some responsibility and authority to students to learn on their own, thus creating opportunities for students to engage in the learning process, interact and discuss the lesson content with each other (Section 4.3.3, pp. 125-126). CL teachers coach and scaffold students' learning (Section 4.3.3, pp. 125-126), which is considered an important aspect of learning communities, as argued by Barab and Duffy (2000). Based on the findings of some teachers' interviews, all these create cooperation and stronger relationships among students and between students and teachers (Section 4.3.6, p. 132). This is in line with Busher et al. (2014), who argue that this cooperative culture is considered to be one of the most important features of CoP. It is unlikely to exist when traditional teaching methods are used. Implementing CL based on the five principles has also helped to improve students' learning in academic and social terms from both teachers and student-participants' perceptions (Sections 4.3.6, pp. 130-132; 4.5.2, pp. 157-159 and 4.5.3, pp. 160-162). In the interviews, the majority of the teachers mentioned their perceptions that students have also changed their attitudes and gained some skills, better communication and social skills, inside and outside the school (Section 4.3.6, p. 132). Most students also reported that working with CL has helped them become more autonomous learners, and therefore contributed to their lifelong learning (Section 4.5.2, p. 159).

Based on the discussion above, I argue that training teachers who are familiar with using lecture-style in traditional educational contexts, such as Saudi Arabia, based on the five principles of CL can create CoP among teachers, which help them with their professional development. I also argue that the CL class can be seen as a community of learning, which helps students with their academic and social learning, identity and personal growth.

5.5 Summary

In general, the data indicates that training is a very important aspect of the implementation of CL in classes, especially with teachers who would like to change their teaching methods from traditional teaching methods (lecture-style) to cooperative learning, because it provides new information and knowledge that affects teachers' beliefs and their practices in the classroom. The training provided teachers with the ability to change their previous lecture-style practices, such as changes in the seating arrangement, in the lesson plan, and in monitoring and evaluation of students' learning; or add new teaching procedures and techniques, such as implementing the five principles of CL and the ways to promote them.

Implementing cooperative learning in Saudi participant-teachers' classes has played an essential role in changing these classes from educator-centred learning to student-centred learning. Teachers delegated some authority and responsibility for learning to students in the class instead of delivering information to students and teacher who had only the authority and responsibility in the class for learning. However, there are some initial challenges that teachers face when they change from lecture-style to CL and there are also factors that can help teachers overcome these challenges and support them to use CL in their classes. I argue that it is possible to implement CL based on its five principles (Johnson & Johnson, 2014) in Saudi classes. The observed teachers seemed to understand and implement the five principles of cooperative learning to a quite effective degree in most cases. Although there were individual differences among the teacher-participants regarding the number of principles and the way to implement them, most of them have shown the ability to do that quite effectively. There are three main factors that affect teachers' implementation of the five principles and the ways they promote them: teachers' knowledge and understanding of the five principles, students' familiarity and experience with CL, and limited lesson time.

In general, in all classes with most teachers, students working in groups have provided evidence of positive interdependence among them as well as individual responsibility for their own learning and that of others. In addition, it can be said that the interaction among students as a whole has shown that they ask for and provide help, ask questions, and discuss ideas and information regarding the task. Social skills, such as listening to each other, taking turns, and thanking each other, have also been observed. Occasionally, students reflected on their own learning process by indicating what has helped or hindered their work completion in order to improve it in the future. However, a

few students in all classes and across the years did not seem to agree that the positive behaviours leading to the implementation of the five principles mentioned above often happened in their class, and this was observed with some group members in Year 10, with T7 and T8 more than other teachers with their students in their classes. Some of the factors that could affect those students' behaviours in groups were the teacher's procedures in relation to monitoring, evaluation of students' learning (assessment), group composition and implementation of the five principles. In addition, those students' lack of familiarity and experience with CL also seem to have affected their classroom behaviours.

Implementing CL based on its five principles seems to be similar to some of the features that characterise communities of practice, such as active engagement with content, reflection, conflict-solving, and collaborative work lead to benefit students academically and socially in comparison with using the lecturing method. Therefore, the general view of both teachers and students is that they prefer to use CL instead of the lecture method. However, there are some difficulties and challenges that can affect the implementation of CL in the Saudi educational context and which should be solved or at least reduced. This point is further discussed in the following chapter. In addition, CL training and implementation in the Saudi educational context could create some characteristics of communities of practice. This can be seen with teachers who received training on CL that could help them to improve their teaching methods and also with students who were taught by a CL teacher, which could help them to learn academically and socially and shape their identities. Some recommendations to enhance these communities of practices will be further discussed in the following chapter.

Chapter 6: Conclusion

6.1 Introduction

Over the last three decades, cooperative learning approaches have been widely researched and a number of studies have indicated the effectiveness of using this approach to improve learners' social and academic performance when working in small cooperative groups (Cavanagh, 2011; Farzaneh & Nejadansari, 2014; Gillies, 2008; Johnson et al., 2010). However, there are still only a few studies conducted in the Middle East (Sarkhouh, 2007; Shaiban, 2009), and especially in Saudi Arabia, where CL is considered to be a new teaching method (Alakili, 2011). The literature review on cooperative learning shows that most empirical studies in the field focus on assessment with only a few studies in the area of attitudes and perceptions (Kyndt et al., 2013), and this is the case in Saudi Arabia as well. The improvement of teachers and learners' understanding of CL and its implementation is, however, unlikely to be achieved if researchers are only concerned with achievement.

The originality of this investigation lies on the fact that it brings together three important aspects. First, the investigation of teachers' and students' perceptions and classroom practices related to CL; second, the fact that participants-teachers received in-service teacher training in the CL based on Johnson and Johnson's (2014) five principles; and third, the fact that such training and implementation of CL took place in a traditional lecture-style teaching and learning context.

One of the features that distinguishes the present study is its focus on Saudi teachers' perceptions of CL and their classroom practices. Unlike most research in the field of CL conducted in Arabic countries, this study is concerned with perceptions, experiences and teaching practices instead of having a strong focus on performance and achievement. Moreover, the present investigation filled the gaps in the literature on CL teacher training and added to early studies by considering cooperative learning in the light of the implementation of its five principles (Johnson & Johnson, 2014). Above all, this investigation is novel in the sense that it examined the implementation of these five-principles of CL in the Saudi context, where the lecture-style is still the dominant teaching approach.

The current study was conducted in one state all-male high school in a city in Saudi Arabia. Eight teachers who had been using CL for more than one year and 97 students who were taught by these teachers participated in this study. The teachers' perceptions were gathered by using individual semi-structured interviews and the students' perceptions were collected by using a questionnaire and individual semi-structured interviews. Additionally, classroom observations were used to collect qualitative and quantitative data regarding teaching practices and field notes were taken to cover learners' classroom interaction and behaviours during group work, as well as direct quotes from the classroom interactions were written down based on audio recordings of the lessons. In addition, classroom observations included three lecture-style lessons delivered by other teachers in other subjects to the same groups taught by CL teachers.

The present study employed a mixed-methods approach (quantitative and qualitative) and attempted to answer the following questions:

1. What are the perceptions of cooperative learning by participant-teachers who received training on it?
2. Which teaching practices do participant-teachers currently employ when facilitating cooperative learning work in the classroom?
3. What are participant-students' perceptions of the benefits and challenges of cooperative learning?

This chapter aims to present a summary of the key conclusions of the study, and discuss the contributions of this investigation to policy-making, research and practice in the educational field. The chapter starts with a discussion of the main results regarding participants' perceptions and practice when using CL along with a discussion of its contribution to knowledge, research and practice. This is followed by a discussion of some limitations of the present study. In this chapter, I also discuss some implications of the present study for teacher education, in particular, and to the educational system in Saudi in general. Finally, I make some recommendations for further studies and consider ways of disseminating the findings and ideas that have emerged from the present investigation.

6.2 The main results and the contributions of the present study

The original contribution to knowledge made by the present study is the fact that it points towards the possibility and the way of implementing CL in the Saudi educational context

based on Johnson and Johnson's model (Johnson & Johnson, 2014). The results of the present study may be transferable to other schools in Saudi Arabia because all schools in the country follow the same system and processes in terms of the assessment, curriculum and teachers' training (Alhogail, 2011; Alnaji, 2014). Moreover, the findings may be transferable to other similar traditional educational contexts as the one in Saudi Arabia. The main objective of this research was to investigate Saudi teachers - who received training on CL based on the five principles of Johnson and Johnson (2014) - and their students' perceptions and practice of the implementation of CL in the class.

6.2.1 Teachers' and students' perceptions (RQ1 & RQ3)

An important contribution to knowledge also made by this study comes from the findings that indicate that all the teachers (Section 4.3.6, pp. 130-132) and the majority of the students (Section 4.5.1, pp. 153-154) in this investigation have developed positive perceptions of cooperative learning and prefer to use it instead of lecture-style. Participants argued that CL brought them both academic benefits (Sections 4.3.6, pp. 130-131 and 4.5.2, pp. 157-159) and social benefits (Sections 4.3.6, p. 132 and 4.5.3, pp. 160-162), which corroborates the findings of a number of previous studies (Farzaneh & Nejadansari, 2014; Idowu, 2013; Johnson et al., 2010).

Another important finding of the present study (Section 5.2.1, pp. 173-177) is the importance of teacher training in order to implement cooperative learning (DelliCarpini, 2009; Taspinar, 2007). The in-service training in cooperative learning based on Johnson and Johnson's model (Johnson & Johnson, 2014) received by the participants has had an impact on the teachers' knowledge and classroom practices (Section 4.3.1, pp. 119-121). They have benefited from this training programme to change their classroom methods from lecture-style to cooperative learning since it provided the knowledge and understanding of CL that enabled them to implement CL in their classes (Sections 4.3.2, pp. 123-124 and 4.3.3, pp. 125-126). The teachers' perceptions regarding CL definition, knowledge acquisition, classroom roles, responsibility and authority have changed since they started using CL due to their training programme (Sections 4.3.2, pp. 123-124 and 4.3.3, pp. 125-126). Although the Saudi educational system and its philosophy may not normally favour profound changes in the classroom dynamics, such as the idea of the delegation of responsibility and authority to students, it was possible to transfer some of the learning accountability and agency from teachers to students. The Saudi educational system tends to see the teacher as the main agent responsible for teaching as well as the main source of

knowledge at the centre of the learning process. However, the delegation of some responsibility and authority to students could lead to an improvement of the quality of students' learning, both socially and academically, and provide the teachers with the opportunity to observe students' learning and their interaction in the class instead of only delivering information to them (Section 4.3.3, pp. 125-126).

The findings of the present study also contribute to the advancement of knowledge about the initial challenges that teachers face during the period in which a change from lecture-style to CL is taking place and the factors that help overcome such challenges (Sections 4.3.4, pp. 127-128 and 4.3.5, pp. 129-130). The initial challenges are considered reactions that need to be taken into account since they can lead to resistance to change (Fullan, 2007). Although resistance to change has been extensively discussed by educators, there is still a gap in the literature related to teachers' initial resistance to change in traditional teaching contexts, such as in Saudi Arabia, which this study has helped to fill to a certain extent. This contribution to our knowledge of the initial challenges faced by teachers using CL can be even more noticeable when considering the change from lecture-style to cooperative learning. The same can be said in relation to the factors that help overcome such challenges (Section 4.3.5, pp. 129-130). Although they have been discussed by researchers, there still a gap in the literature related to the factors that can help teachers overcome such initial challenges to change from lecture-style to CL generally and especially in the Saudi context (Section 4.3.5, pp. 129-130). This also indicates that, besides the training programme, it is important to consider the aspects that can help overcome the initial challenges and help teachers to effectively implement CL in their classes. This aspect had not been extensively discussed in the literature and such discussion is an original contribution to knowledge provided by this investigation.

Another novel aspect highlighted by this study is that the implementation of CL based on the five principles (Johnson & Johnson, 2014) bears similarities to some characteristics of communities of practice (Barab & Duffy, 2000; Wenger, 2011). This may lead to academic and social benefits for students (Johnson et al., 2010) and the development of a learning community (Barton & Tusting, 2005; Hughes et al., 2007; James et al., 2015). The results of the present study show that all the teachers and the majority of the students believed that CL can lead to academic benefits (motivation, autonomy, critical thinking skills, problem-solving skills, understand the lesson content, retention and increase student achievement) in comparison with lecture-style (Sections 4.3.6, pp. 130-131 and 4.5.2, pp.

157-159). The same can be said in relation to the social benefits (enjoyment in learning, reduction of anxiety, increasing self-esteem, improve communicative, social and conflict-solving skills, and improve interpersonal relationships) (Sections 4.3.6, p. 132 and 4.5.3, pp. 160-162). Helping students gain these skills is much needed nowadays as they can promote lifelong learning, which is essential for students to succeed in education, work, and other areas of adult responsibility in the twenty-first century. Cooperative learning training and implementation in other Saudi schools over the long term could generally improve the quality of education and learning in such a traditional educational context, and Saudi society as a whole could benefit from it. In addition, this could help prepare and create new generations of students who are qualified for the work in Saudi labour market, which is one of the aims of the Ministry of Education (Alaqueel, 2013; Alhogail, 2011).

However, the findings of this research indicate that there are some challenges and difficulties in implementation of CL in the Saudi context (Section 5.2.4, pp. 184-187). For example, students' long experience with the lecture method (Sections 4.3.4, p. 127 and 4.5.6, p. 169) could lead some students to express less positive views towards CL (Table 4.10, p. 154). Additionally, the considerable amount of information in the curriculum that teachers are required by the Ministry of Education to cover in each class (MOE, 2015) and the complexity of the content compared to students' level of understanding may create difficulties for students to learn by themselves (Section 4.3.4, p. 126). To the best knowledge of the researcher, this aspect related to students processing of content had not been found in other previous studies conducted in Saudi Arabia. Moreover, there is a high teaching load associated with CL, which requires teachers to expend more time and effort before the lesson to plan and prepare for the class, compared to what they usually need to do when preparing a lecture-style lesson (Section 4.3.7, p. 133). Similarly, during the lesson more time and effort are necessary when teachers need to re-arrange rows of seats into group islands (Section 4.4.3, p. 139). In addition, a large class size could create difficulties moving inside the classroom space and in terms of noise (Section 4.3.4, p. 126), negatively affecting group learning. Furthermore, when the majority of students in the class are weak, this has a negative impact on the quality of the discussions, interaction and task completion in their groups (Sections 4.3.4, p. 126 and 4.5.1, p. 155). Other challenges are free-riding (Section 4.3.7, p. 133; Table 4.12, p. 168) and the assessment system established by the Ministry of Education, which, as a whole, promotes a competitive environment among the students (Sections 4.3.4, pp. 126-127 and 4.5.1, p. 155). The centralisation of the Saudi educational system seems to contribute to some of the challenges

mentioned above, such as the curriculum and the assessment system, and also seems to have an impact on parents who tend to encourage their children to compete with others to achieve higher marks and be better than their peers (Section 4.3.4, p. 126). This may lead to reduced cooperation between students (Section 4.5.1, p. 155). However, although some studies (Gilbert, 2007; Thanh, 2011) indicate that CL could badly impact on class management and control, most teachers in this study argued that CL helped them manage and control the class (Section 4.3.3, p. 126).

6.2.2 Classroom practice (RQ2)

Based on the unique findings of this study, it can be said it is possible to implement cooperative learning based on the five principles of Johnson and Johnson (2014) in the Saudi educational context (Sections 4.4.4, pp. 140-144 and 4.4.5, pp. 144-147). The findings of the present study indicate that the vast majority of teachers considered the five principles of CL in their classrooms (Johnson & Johnson, 2014) and the ways to promote them (Section 4.4.4, pp. 140-144). However, the teachers considered the three principles that are related to academic performance – positive interdependence, individual accountability and promotive interaction – in each of the observed lessons (Table 4.8, p. 142), whilst the two principles related to team function – social skills and group processing – were not observed in every observed lesson for all teachers, except T6 and T7, who taught students new to CL in Year 10. These two teachers focused on social skills in every lesson but the same did not happen in relation to group processing (Table 4.8, p. 142). There is a need to know and understand the factors that can affect a teacher's decision-making in relation to the implementation of CL principles because neither the literature on the implementation of the five principles nor Johnson and Johnson's model (Johnson & Johnson, 2014) of cooperative learning account for this, especially in traditional contexts such as the Saudi context.

This specific aspect considered in this research constitutes original contribution to knowledge in the field of teacher education in cooperative learning. This study has filled in this gap in the literature by providing three factors that can affect teachers' implementation of the five principles and the ways they promote them: teachers' knowledge and understanding of the five principles, students' familiarity and experience with CL, and limited lesson time (Section 5.3.2, pp. 189-194). This can help better implement this teaching approach in natural settings. Although all the teachers in this study received training on CL, two teachers (T7 and T8) who did not receive the full training showed

lower standards in the implementation of the five principles in comparison with the lessons conducted by the other teachers (Section 4.4.4, pp. 140-144) and had different procedures related to monitoring (Section 4.4.6, pp. 148-149) and evaluating students' learning after completing the task (Section 4.4.8, pp. 150-153). A possible reason for some of the different procedures carried out by these two teachers and the other participant-teachers is that T7 and T8 had a limited amount of time to be involved and engaged in interactions that seem to be important to affect and improve teachers' knowledge and classroom practices (Section 4.3.1, pp. 120-122). These interactions enable teachers to gain knowledge and teaching skills from discussing issues regarding CL with training instructor, receiving classroom observations from him with individualised feedback, visiting other schools to observe experienced CL teachers (Vygotsky, 1978), experiencing peer observation with feedback, and discussing issues regarding CL with colleagues (Wenger, 1998).

Another novel findings of this research is that the CL procedures implemented by the teachers (monitoring, assessment, implementation of the five principles and group composition) could affect students' behaviours in groups. For instance, they could affect students' ability to work cooperatively in groups towards the shared goals, their willingness to politely interact and help each other to learn the content, and their capacity to reflect on their work (Section 5.3.3, pp. 194-197). In addition, students' lack of familiarity and experience with CL also seems to have affected their classroom behaviours (Section 5.3.3, p. 197). This unique finding could increase our knowledge and understanding regarding the relationship between a teacher's CL procedures based on its five principles (Johnson & Johnson, 2014) and students' behaviours in groups to achieve the desired result, which ultimately is the improvement of students' academic and social learning. Therefore, issues such as monitoring, evaluation of students' learning and group composition should be taken into account in addition to the five principles of CL when this teaching method is implemented. Although the literature indicates the importance of group composition in terms of group size and the creation of homogenous or heterogeneous groups (Ballantine & Larres, 2007; Johnson & Johnson, 2014; Johnson et al., 2010), the present study added another issue to them which had not been previously discussed: the relationship among students and their personality traits (Sections 4.5.1, p. 155 and 4.5.6, p. 169).

In general, the results indicate that students' behaviours in classes with teachers who used lecture-style were completely different from the behaviours the same students displayed when attending lessons with teachers who used CL (Section 4.4.5, pp. 144-147).

The students in lecture-style classes sat in rows and they faced the whiteboard and the teacher. They passively listened to the teacher while he delivered the information to them and they were not allowed to participate unless the teacher asked questions (Section 4.4.5, p. 147). However, students in CL classes generally (Section 4.4.5, pp. 144-147) shared goals that were determined by the teacher and helped each other complete the task (positive interdependence). Moreover, students in groups usually carried out their share of the group work assigned by the teachers, worked independently and helped other group members to learn the content (individual accountability). Students in groups also usually discussed the content, interacted with each other, and provided to and received explanation from their peers related to the content (promotive interaction). In addition, the students in the groups generally showed the ability to interact in a polite way with the others, such as thanking the previous group for their answer, agreeing on the same answers, actively listening, taking turns and keeping a low voice when speaking, all of which are considered to be important to group work and interaction (social skills). Finally, students generally reflected on their work and were able to differentiate between the actions that helped and those that did not help them with their group work (group processing) when the teachers asked them to do so (Section 4.4.5, pp. 144-147). These findings based on the classroom observation of the implementation of the five principles of CL are unique in the Saudi Arabian educational context.

The results of this research also highlighted some original aspects related to lesson planning for cooperative learning (Section 4.4.1, pp. 134-137). The majority of teachers focused on academic and social objectives in their plan instead of just academic ones, which is usually observed in lecture-style lessons (Section 4.4.1, pp. 134-135). Participant-teachers explained the way they designed lesson tasks and the possibility of using CL to teach different topics in the syllabus in every lesson (Section 4.4.1, p. 135). However, the teachers adopted a mixed approach where both CL and lecture-style may co-exist in lessons (Table 4.7, p. 136) and mentioned the factors that prevented them from using cooperative learning for the entire class (Section 4.4.1, pp. 135-136). Such mixed approach had not been previously reported in the literature in the field. This advances our knowledge and understanding regarding lesson planning, since the CL literature review does not clarify how a teacher should plan for a cooperative learning lesson or explains which factors should be considered in that plan. Neither does it specify the total amount of lesson time that should be devoted to cooperative activities, especially in traditional educational contexts. In addition, some teachers positively reflected on changing their practice from

lecture-style to CL in the classroom with regard to changing the classroom layout from rows to cooperative learning groups (Section 4.4.3, p. 139), monitoring students in the class (Section 4.4.6, p. 148) and evaluating students' performance (Section 4.4.8, p. 152).

Finally, the present research reveals that (Section 5.4, pp. 201-202) there are similarities between the five principles of CL (Johnson & Johnson, 2014) and some characteristics of communities of practice (Barab & Duffy, 2000; Wenger, 2011). Therefore, CL training and implementation in the Saudi educational context could promote the development of new communities of practice. This finding makes for original contribution to knowledge in the area of communities of practice in education. This could be seen with teachers who received training on CL since their training and experience with CL helped them improve their teaching methods and share new knowledge with other teachers in their institution (Section 5.4, pp. 199-201). It could also create communities of learning among students who were taught by CL teachers and help them learn academically and socially and shape their identities (Section 5.4, pp. 201-202). Some recommendations to enhance these communities of practices will be further discussed in Section 6.4 (pp. 217-218).

6.3 Limitations of the present study

Although the present study has highlighted essential issues and aspects that have not been previously researched in the educational literature, especially in Saudi Arabia, some of its limitations should be acknowledged. The main limitation in this study is the number of participants might be considered quite small in relation to the number of teachers and students in Saudi Arabia. One school employing eight teachers who use CL with their students was selected as a case study. However, including more teachers and their students in this study could have expanded the results. This was not possible in this study because the number of teachers who have been trained on using CL based on Johnson and Johnson's model is very limited (20 teachers), and they are spread around many different schools (Sections 1.4.5, p. 24 and 3.6, pp. 93-95). Another aspect to consider regarding the research site is that this investigation was conducted in an all-male school since the researcher would not have access to an all-female school and there are no comprehensive schools in Saudi Arabia.

In addition, involving other stakeholders such as school principals, teachers' supervisors, educators at universities and parents could be better in order to provide a more comprehensive picture regarding the possibility of implementing CL and the factors that

can affect this implication in the Saudi context. However, this was not possible in this study due to time constraints. Furthermore, the data was gathered from teachers who teach a few subjects, such as English language, chemistry, biology, Arabic Language and mathematics. However, the study did not examine the possibility of using CL based on its five principles with other subjects, such as religion, sports and history.

Another limitation is that the increase in students' achievement due to cooperative learning that is suggested by this study was only collected from teachers' and students' perceptions. An experimental design to compare students' achievement with using CL based on its five principles and using lecture-style in addition to participants' perceptions could have made the argument stronger. As previously mentioned, the main aim of the present study is to examine participants' perceptions of using CL in the Saudi context. Although the researcher made efforts to obtain data on students' achievement scores to indicate whether there is any substantive evidence to support this argument that CL improves performance, this was difficult due to administrative barriers.

As for the methodology, an ethnographic study where the researcher would be able to observe more lessons and immerse himself in the school environment and everyday life would be better to have a more general view of how CL is implemented. However, due to time and access limitations, this was not possible. The triangulation of data collected from different participants (teachers and students) by using different data collection tools (interviews, questionnaire, observations) is an attempt to compensate for this limitation.

Finally, the present study did not investigate certain strategies, such as reward interdependence and identity interdependence, which promote the implementation of the five principles of CL in Saudi classes because the teachers were not trained to use them. Doing so could help know to what extent reward interdependence and identity interdependence could affect Saudi students' working in groups. Although teachers mentioned that using marks as a reward could have an impact on students' working cooperatively, it was not possible to investigate this practically because of the Ministry of Education's regulations.

6.4 The implications and recommendations

As previously mentioned, the majority of previous studies on CL in national and international literature focus on assessment (Alreshidy, 2008; Shaiban, 2009; Tran, 2014)

with only a few studies in the area of attitudes and perceptions (Algarfi, 2010; Er & Atac, 2014; Hennessey & Dionigi, 2013). Improving teachers and learners' understanding of CL and its implementation is, however, unlikely to be achieved if research only focuses on achievement. Based on the findings of this study, some implications and recommendations can be made for policy-makers and educators in Saudi Arabia.

First of all, the findings of the present study could have implications for the development of teacher training programmes and to prepare teachers to use cooperative learning approaches in their classrooms. This research (Section 5.2.1, pp. 173-177) indicates that there is a significant need in Saudi Arabia to adopt alternative new teaching methods, such as cooperative learning, during both pre-service training and continuing professional development (CPD). This could help update and change teaching and learning methods in Saudi classes, which seems to be essential to improve the quality of learning outcomes. The majority of teachers in Saudi Arabia (more than half a million) are likely to have been trained on just using traditional teaching methods and they are not likely to receive appropriate CPD on other teaching methods such as CL (Algarfi, 2010).

Therefore, the pre-service training at Saudi universities needs to be revised and reformed to prepare teachers to use new teaching methods such as CL. The university pre-service programme should comprise the issues identified that might have an impact on teachers using CL, such as the definition of CL, teachers' beliefs about knowledge acquisition, teachers' beliefs about classroom roles, responsibility and authority (Sections 4.3.2, pp. 123-124 and 4.3.3, pp. 125-126). In addition, the programme should include the five principles of CL and the ways to promote them (Section 4.4.4, pp. 140-144). Furthermore, the programme should consider other issues such as lesson plan, group composition, monitoring and evaluating students' learning (Sections 4.4.1, pp. 134-137; 4.4.2, pp. 137-138; 4.4.6, pp. 148-149 and 4.4.8, pp. 150-153). Moreover, it is important to give novice teachers practical experience with CL before they start their teaching career in addition to theoretical aspects, which in the opinion of teachers in this study, tends to make these programmes more useful (Section 4.3.1, p. 122). Instead of simply learning and listening to the facts, novice teachers should be involved in CL interactions when they learn different subjects.

In addition, CPD programmes also generally need to be revised and reformed to prepare teachers to use new teaching methods such as CL and consider the aspects mentioned above. The role of the Ministry of Education in Saudi Arabia should now be to

reform these programmes to meet the teachers' needs, which is important in any development, especially one using new teaching methods, such as CL. The CPD on cooperative learning which participant-teachers attended needs to be developed in some aspects. For example, the teachers should be trained on other ways that promote the implementation of the five principles, such as reward interdependence and identity interdependence, as discussed in Section 2.4.2 (p. 43), to enhance the positive interdependence and individual accountability among students in groups as well as reduce the phenomenon of free-riding. The training should also consider some organisational aspects of the programme, such as teachers' time constraints and the subject knowledge of the trainer (Section 4.3.1, p. 122). Furthermore, the teachers should be trained to consider other aspects, such as relationships between students and their personality traits in addition to group size and students' academic level when they divide students in groups (Section 5.2.4, pp. 185-186). This helps to improve teachers' implementation of CL and students' learning.

After developing the current CPD programme on cooperative learning, the Local Department of Education should develop and implement similar programmes in other schools in the city to train the teachers to adopt CL in their classes. In addition, there is a need for the Ministry of Education, the Local Department of Education in different cities, the educational colleges at universities and other educators in Saudi to work with each other to develop similar programmes for the huge number of teachers in the country to develop their methods of teaching and learning. The current training on CL and the findings of the present study could be used as a resource to assist their work and efforts. In addition to the training programme, it is important to consider other factors such as the school principal's support, peers and trainers' support, and classroom observation with individualised feedback that help overcome initial challenges when teachers change from lecture-style to CL and encourage them to continually use this teaching method (Sections 4.3.4, pp. 127-128 and 4.3.5, pp. 129-130). However, changing teachers' teaching methods requires patience, time and follow-up, as in the case of the participants in this study where the Local Department of Education has systematically conducted observation and school inspections for more than a year to support teachers who have been using CL (Section 3.6, p. 94). In addition, students need time to become familiar and gain experience with CL (Section 5.3.3, p. 197).

There are some challenges and difficulties (Section 5.2.4, pp. 184-187) mentioned by the participants of the present study that need to be solved or at least reduced by the Ministry of Education. The curricula need to be developed because, at present, some parts contain considerable amounts of information and some of them are not suitable for students at certain levels to learn on their own (Section 5.2.4, pp. 184-185). The current curricula seem to be suitable for using traditional teaching methods more than CL. However, developing these curricula to be suitable for CL could be more beneficial. Furthermore, the current lesson time is 45 minutes, which should be increased to 60 minutes, for example, because 45 minutes, whilst it seems suitable for a lecture-style lesson, where the teacher delivers a lot of information in a limited time, is too short for a CL lesson, where the students need to interact and discuss the lesson content, which naturally requires more time. Therefore, teachers currently use mixed methods (lecture-style with CL) in one lesson to cover the required content (Table 4.7, p. 136). Moreover, increasing the lesson time could help teachers implement the five principles of CL, where one of the factors that might affect its implementation is limited lesson time (Section 5.3.2, pp. 190-193). Furthermore, the school administration should determine specific CL classrooms so CL teachers do not need spend lesson time rearranging the layout of a classroom after it has been used for a lecture-style lesson, which would save lesson time (Section 4.4.3, p. 139).

Another issue is the assessment system that needs to be developed. This system does not allow for teachers to use marks and other kinds of assessment that help teachers promote cooperation among students in groups (Section 5.2.4, p. 185). The Ministry of Education should reduce its degree of centralisation and provide teachers with more freedom to use other kinds of assessment. This would potentially create a more cooperative environment, which could have a positive impact on using CL and help reform the general educational system. Therefore, developing teaching methods requires developing the curriculum and the assessment system at the same time.

Another factor is the number of lessons that teachers teach every week, which should be reduced. Teachers usually teach for more than 20 hours a week (Table 4.1, p.116). However, using CL requires teachers to spend more time and effort on lesson planning for each class, which was one of the challenges the teachers faced when they changed their teaching methods (Section 4.3.7, p. 133). Reducing the number of lessons could help reduce the teaching load. Furthermore, the class size should be reduced in order to enhance the use of CL and reduce the amount of noise generated by the groups (Section

5.2.4, p. 187). Some studies show that the optimum class size when using teaching methods such as CL is between 15 and 20 students (Almulla, 2012; Gross, 2009). In addition, the school administration should make sure that each class has students with different academic levels in order to set up heterogeneous groups, which is important from the participants' point of view (Section 5.3.1, pp. 188-189). Moreover, the school administration should arrange meetings with students' parents to discuss some ideas related to CL, to encourage them to promote discussion and dialogue with their children and to encourage their children to cooperate and share the information with others in the class (Section 4.3.4, p. 127).

Finally, the communities of practices that are formed after CL training among CL teachers in the school or among students and CL teacher in the class should be enhanced (Section 5.4, pp. 199-202). These communities could play an essential role in developing a cooperation culture in a school instead of a competitive or individualistic environment. They could also improve teachers' teaching methods and learning outcomes because, when teachers in these CL communities discuss and exchange their opinions and experiences, they can construct knowledge to improve their classroom practices and change their identities, thus having a positive impact on students' learning. Moreover, these CL communities could encourage other teachers who are familiar with lecture-style to change to CL, as happened to T8 (Section 5.4, p. 201). Therefore, the Ministry of Education is not the only one responsible for improving teaching and learning; teachers can also bear some responsibility for the process by participating in it through these communities. As a result, the school principal and administration should support these communities by providing a place for teachers to meet, reducing the number of lessons every week for the teachers, as previously mentioned, and arranging teachers' timetables so that they have the same available time to meet in the school for discussion and other activities. The limited time available for involvement and engagement in interactions seems to negatively affect teachers' knowledge and classroom practices and could be a reason for their lower standards in the implementation of the five principles (Section 4.4.4, pp. 140-144).

The main feature of these communities is a cooperative culture, which is considered the basis for democratic societies. This cooperative culture could start from class and school, and therefore implementing CL in other schools in the country could benefit the whole society in the long term.

6.5 Further study

Based on the limitations previously discussed, I suggest some possible future research on cooperative learning, especially in the Saudi context. This research indicates that there are positive outcomes when the teachers changed their teaching practice in Saudi classes from traditional teaching methods to using CL based on its five principles. However, there is a need for further studies to extend the work of the present study in some aspects. For example, as previously mentioned, this study investigated the perceptions and practices of teachers who taught certain subjects such as English Language and mathematics in an all-male school. However, conducting studies to examine the possibility of using CL based on its five principles with other subjects and in all-female schools could be worthwhile to have a more comprehensive picture. Furthermore, future research with more time should include other stakeholders, such as school principals, teachers' supervisors, educators at universities and parents, in addition to teachers and students, because their engagement could be essential in providing a comprehensive picture regarding implementing CL in the Saudi context.

In addition, conducting similar research in secondary and primary schools could provide further insights into the perceptions and implementation of CL in different educational stages. I believe it might be essential to investigate different stages and different age groups to know the possibility of implementing CL because age may have an impact on students' behaviour and progress. This study was conducted in an all-male school. As the schools in the country are all single sex, further research might try to replicate this study in an all-female school in order to find out the possible similarities and differences between the results in relation to gender. Further studies can be carried out in pre-service teacher training at universities to investigate student teachers' perceptions regarding CL after having experienced it.

Additionally, as previously mentioned, based on participants' point of view, this research indicates that students' achievement could improve due to cooperative learning. As a result, future research could quantitatively investigate this issue by using experimental design in addition to participants' perceptions. Furthermore, future studies could consider other strategies such as reward interdependence and identity interdependence that were not covered in this investigation.

Finally, after CL has been implemented for a long time in other schools in the country, further studies can be carried out to investigate to what extent CL could benefit Saudi society as a whole. In addition, large-scale research could be conducted to find out whether and to what extent the policy of the Ministry of Education could support the long term implementation of CL in the schools in the whole country. Moreover, there is a need to investigate the supportive factors that can enhance communities of practices that are formed after training teachers on CL and implementing it in their classes, and the barriers that these communities might face in the Saudi traditional educational context.

6.6 Dissemination

It is important to disseminate the findings of this investigation so that the educational community, teachers, educators, policy-makers and researchers can become aware of the possibility of implementing CL based on the five principles of Johnson and Johnson (2014) in educational traditional contexts, such as Saudi Arabia. The results of this study (Section 6.2, pp. 206-213) may be transferred to other schools in the country as well as to communities in contexts similar to that in Saudi Arabia.

Therefore, the findings of this investigation will be disseminated and notified to the stakeholders. A copy of the final research report will be sent to The Saudi Cultural Bureau, which has sponsored this research. A summary of the findings will be made available to the school principal and the participant-teachers. Dissemination of findings to the general public and the academic community has already started with my presentation at three different conferences:

- 1- University of Leicester, School of Education, Annual Research Conference in Leicester on 22nd May 2015.
- 2- 11th International Conference on Teaching, Education and Learning in London on 19th - 20th September 2016.
- 3- 4th Global Conference on Business and Social Sciences in Dubai on 14th-15th November 2016.

Participation in future conferences in Saudi Arabia will follow. As for publications, the papers presented in the conferences above have also been published in their respective journals and proceedings (Almulla, 2016 a; Almulla, 2016b).

APPENDIX A – Local Education Department Letter of Consent



School of Education
University of Leicester
21 University Road
Leicester
LE1 7RF
+44 116 252 3688

Research Project - Letter of Consent

Project Title: An Investigation of Teachers and Students' Perceptions of Cooperative Learning: A Case Study in a Saudi Arabian High School.

Researcher: Mohammed Almulla, MA Education. University of Leicester, UK.

Project description: the research is part of a Doctor of Philosophy degree at the University of Leicester in the UK. The doctoral student is Mohammed Almulla and the thesis supervisor is Dr Hugh Busher. The project will consist of an analysis of teachers and students perceptions of the implementation of cooperative learning approaches in the classroom in the context of a high school in the city of Alahsa in Saudi Arabia.

The researcher would like to ask permission to the Alahsa Local Department of Education to visit the selected school for the purpose of data collection. A sample of teachers and students will be interviewed and students will also be asked to complete a questionnaire. Besides that classroom observations will be conducted. Participants will be provided with a letter of informed consent.

All data will be anonymised and the findings will be used for educational and research purposes only. All data will be handled with maximum confidentiality and that the work will be conducted under expert supervision and the strict ethical standards of the University of Leicester.

The researcher understands that this research and its outcomes have a social and educational orientation and that no data will be used for commercial purposes.

Leicester, February 2015

APPENDIX B – Teachers’ Letter of Consent



School of Education
University of Leicester
21 University Road
Leicester
LE1 7RF
+44 116 252 3688

INFORMED CONSENT

Project Title: An Investigation of Teachers and Students’ Perceptions of Cooperative Learning: A Case Study in a Saudi Arabian High School.

Researcher: Mohammed Almulla, MA Education. University of Leicester, UK.

Project description: the research is part of a Doctor of Philosophy degree at the University of Leicester in the UK. The doctoral student is Mohammed Almulla and the thesis supervisor is Dr Hugh Busher. The project will consist of an analysis of teachers and students perceptions of the implementation of cooperative learning approaches in the classroom in the context of a high school in the city of Alahsa in Saudi Arabia.

This investigation is a mixed-methods study, which aims to collect information related to your perceptions of advantages, challenges and factors that affect the use of cooperative learning in the classroom. Your perspectives are important to complete this study.

Procedure: data will be collected from interviews and classroom observation.

Anonymity and confidentiality: Participation in this study is voluntary which means that you are not obliged to participate and you have the right to withdraw at any stage without any negative consequences by advising the researcher. You will be interviewed twice for approximately one hour in length each in the school premises. With your permission, the interview will be audio-recorded to facilitate collection of information, and later transcribed and translated from Arabic into English by reliable translators for analysis. Shortly after the interviews have been completed, a copy of the transcript in Arabic will be sent to you to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. Classroom observations will be conducted twice and fields notes will be available to you if requested.

Your identity will remain entirely confidential. In reporting the study, I may quote from individual responses, but if I do so, it will be anonymously: I will ensure that there is no means of identifying the individual participant. You are free to omit any questions you are not comfortable with. You may contact me at any point if you have any concerns about having your information to be used for the purposes of this research. You may also contact me at any point after the data collection is

completed to ask that your responses be destroyed, and I will comply with such requests up to the point when data has been aggregated for analysis. No data will be passed to any third party. All data will be handled with maximum confidentiality, and the results will be discussed with those participants who so desire.

Risks or possible reasons for annoyance: the study should not involve any risk for the participants.

Benefits to participating: There is no reward for taking part, but we will send to those who participated in the interviews a digest of any resulting publications, if you request so.

Persons to contact in case of questions: Mohammed Almulla (ma649@le.ac.uk) and Dr Hugh Busher (hcb5@le.ac.uk).

Thank you in advance for taking part in this study.

Mohammed Almulla ma649@le.ac.uk

Please tick the boxes below as appropriate.

1. I have read all the information given above and I agree to participate in this study.

Yes ☐

No ☐

2. I agree to have my interview audio-recorded.

Yes ☐

No ☐

3. I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

Yes ☐

No ☐

4. I agree to have my lessons observed and audio-recorded.

Yes ☐

No ☐

Participant's name:

Signature:

Date:

Researcher's name:

Signature:

Date:

APPENDIX C – Students’ Letter of Consent



School of Education

University of Leicester
21 University Road
Leicester
LE1 7RF

+44 116 252 3688

INFORMED CONSENT

Project Title: An Investigation of Teachers and Students’ Perceptions of Cooperative Learning: A Case Study in a Saudi Arabian High School.

Researcher: Mohammed Almulla, MA Education. University of Leicester, UK.

Project description: the research is part of a Doctor of Philosophy degree at the University of Leicester in the UK. The doctoral student is Mohammed Almulla and the thesis supervisor is Dr Hugh Busher. The project will consist of an analysis of teachers and students perceptions of the implementation of cooperative learning approaches in the classroom in the context of a high school in the city of Alahsa in Saudi Arabia.

This investigation is a mixed-methods study, which aims to collect information related to your perceptions of advantages, challenges of using cooperative learning in the classroom. Your perspectives are important to complete this study.

Procedure: data will be collected from interviews and classroom observation.

Anonymity and confidentiality: Participation in this study is voluntary which means that you are not obliged to participate and you have the right to withdraw at any stage without any negative consequences by advising the researcher. You will be asked to answer a questionnaire about advantages, challenges, teachers’ implementation on cooperative learning in the classroom and group work. You may be interviewed once for approximately one hour in length in the school premises. With your permission, the interview will be audio-recorded to facilitate collection of information, and later transcribed and translated from Arabic into English by reliable translators for analysis. Shortly after the interviews have been completed, a copy of the transcript in Arabic will be sent to you to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish.

Your identity will remain entirely confidential. In reporting the study, I may quote from individual responses, but if I do so, it will be anonymously: I will ensure that there is no means of identifying the individual participant. You are free to omit any questions you are not comfortable with. You may contact me at any point if you have any concerns about having your information to be used for the purposes of this research. You may also contact me at any point after the data collection is completed to ask that your responses be destroyed, and I will comply with such requests up to the point when data has been aggregated for analysis. No data will be passed to any third party. All

data will be handled with maximum confidentiality, and the results will be discussed with those participants who so desire.

Risks or possible reasons for annoyance: the study should not involve any risk for the participants.

Benefits to participating: There is no reward for taking part, but we will send to those who participated in the interviews a digest of any resulting publications, if you request so.

Persons to contact in case of questions: Mohammed Almulla (ma649@le.ac.uk) and Dr Hugh Busher (hcb5@le.ac.uk).

Thank you in advance for taking part in this study.

Mohammed Almulla ma649@le.ac.uk

Please tick the boxes below as appropriate.

1. I have read all the information given above and I agree to participate in this study.

Yes ☐

No ☐

2. I agree to have my interview audio-recorded in case I am selected for it.

Yes ☐

No ☐

3. I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

Yes ☐

No ☐

Participant's name:

Signature:

Date:

Researcher's name:

Signature:

Date:

APPENDIX D – Permission Letter to Conduct the Research

الرقم : ١٥ / ٢٦١٢٧٦١٢١
التاريخ : ١٤٣٦ / ٧ / ١ هـ
المشروع : ١

وزارة التعليم
الإدارة العامة للتعليم بمحافظة الأحساء
الشؤون التعليمية - إدارة الإشراف التربوي

بشأن : بحث ميداني .

المكرم: الباحث محمد بن عبد اللطيف الملا
طالب دكتوراه في جامعة ليستر في المملكة المتحدة

حفظه الله

السلام عليكم ورحمة الله وبركاته وبعد،،

فبناءً على خطابكم بتاريخ ٣٠ / ٦ / ١٤٣٦ هـ المتضمن إجراء بحث استقصائي من وجهة نظر الطلاب والمعلمين حول استخدام طريقة التعلم التعاوني في إحدى المدارس الثانوية بمحافظة الأحساء خلال الفترة من ١ / ١١ / ١٤٣٦ هـ حتى ١ / ٢ / ١٤٣٧ هـ لأغراض البحث العلمي تحت إشراف من جامعة ليستر . عليه لآمانع من إجرائكم البحث خلال الفترة المذكورة وتحت إشراف مباشر من إدارة الإشراف التربوي .

وفقكم الله ،،،،

مدير إدارة الإشراف التربوي
حمد بن محمد العيسى

وزارة التربية والتعليم
الإدارة العامة للتربية والتعليم بمحافظة الأحساء

إدارة الإشراف التربوي / مباشر ٥٨٠٣٦٠٢ فاكس ٥٨٠٣٦٠٢ البريد الإلكتروني edu15@hasaedu.info

APPENDIX E – Teacher's Interviews

First Round - Teachers' perceptions

Background information

Q1. Could you briefly talk about yourself and your teaching experiences?

Probes: How long have you been teaching? Where did you do your initial teaching training? When? Where have taught?

Q2. Can you tell me about your current teaching?

Probes: What subject do you teach at the moment and in which grade level? How long have you been implementing cooperative learning approach in your class?

Teacher training

Q3. Can you tell me about the teacher training you have received?

Probes: What teaching approach did you use before? Why? What teaching approach was used with you when you were a trainee teacher? What type of training in cooperative learning did you have? How long? Do you think was more helpful for you and why? How do you comment on training programme? How do you think this training programme can be improved?

Definition & knowledge acquisition

Q4. How would you define cooperative learning before your training?

Q5. How would you define cooperative learning after implementation?

Q6. Before training, what was your perception of the best way for students to acquire knowledge? What kinds of teaching activities you thought helped students to learn?

Q7. Currently, what is your perception of the best way for students to acquire knowledge? What kinds of teaching activities you think help students to learn?

Teachers' and students' roles

Q8. Before training, how would you describe the role of the teacher in class? How would you explain the role of students in class?

Q9. Currently, how would you describe the role of the teacher in class? How would you now explain the role of students in class?

Factors affecting the use of CL

Q10. What factors do you think affect the use cooperative learning?

Probes: Do you think that the ministry of education teaching guidelines and regulations have any impact on your use of CL? Do you think this particular school context (for example, location, number of staff and students, teaching culture and traditions) has any impact on your views and use of CL? Do you think your students' background (for example, social students, family history, and previous learning experiences) has any impact on the use of CL in class?

Q11. What challenges could teachers face when they change their teaching methods from lecture-style to cooperative learning? How do you overcome these challenges or difficulties?

Advantages

Q12. What are the academic advantages of using cooperative learning?

Probes: Do most of your students work productively in groups? Why (not)? Do you think cooperative learning is helpful for your students' learning? Why (not)? Do you think cooperative learning affects students' performance in the final exam more than lecture-style?

Q13. What are the social advantages of using cooperative learning?

Probes: Do you think your students enjoy working in groups? Why (not)?

Disadvantages

Q14. In your opinion, what are the disadvantages of using cooperative learning? If any, how do deal with these disadvantages?

Second Round – Teachers' practices

Lesson planning

Q1. How do you plan for your lesson and what factors do you consider in that plan?

Probes: Do you use cooperative learning to teach all topics your subject? Why (not)?

Group composition

Q2. What aspects do you consider when setting CL group work in the classroom?

Probes: Could you explain how do arrange the classroom seating? Why? How many students do you put in each cooperative group? Why? Which criteria do you use to put them in cooperative group? Why? Do you think both high-achieving students and low-level learners could benefit of using cooperative learning? Explain. Do you assign roles for students in a group such as recorder, reporter, and leader? Why or why not?

Implementation of the CL principles

Q3. Which do you consider the most important principles to make cooperative learning methods work well with students in the classroom?

Probes: How do you promote positive interdependence among students? How do you promote individual accountability among students? Do you think that set tasks and problems are enough to promote interaction? How does this work? In your opinion, which are the skills that students require to work successfully in a group? How can these skills be promoted? Regarding group processing, how do you encourage students to be more reflective about how they worked as individuals and as members of a group?

Monitoring

Q4. How closely do you monitor your students' progress when they work in groups?

Rewards

Q5. What do you think about using rewards in cooperative learning?

Probes: In your opinion, if teachers give students rewards, how should they use it (individual or group)? If so, what kinds of rewards do you give? If so, what are your criteria for giving rewards?

Assessment

Q6. How do you assess students' learning?

Probes: How do you assess students' learning after group work? Do you give the group feedback and marks? Explain. How can assessment assist cooperative effort?

APPENDIX F – Student Interviews

Academic and social outcomes

Q1. Do you enjoy working with other students in groups? Why (not)?

Q2. What are some things that you have learned while working in groups?

Q3. Do you think using cooperative learning is beneficial for you in comparison with lecture-style?

Q4. Do you think cooperative learning helps you academically (learning)? Why (not)?

Q5. Do you think your social skills have improved from using cooperative learning? Why (not)?

Classroom procedures adopted by the teacher

Q6. In your opinion, what is the role of your teacher in class?

Q7. Which things that you like related to teacher's implementation of cooperative learning procedures, if any?

Q8. Which things that you dislike related to teacher's implementation of cooperative learning procedures, if any?

Behaviour in group work

Q9. How do you and other students in your group work together?

Q10. How do you and other students in your group finish the assignment or accomplish the group's goals?

Q11. What things do you do to help your teammates?

Q12. Which factors do you think make cooperative learning activities work well?

Challenges of working cooperatively

Q13. In your opinion, which are the challenges or difficulties of using cooperative learning? What do you suggest to overcome these difficulties?

APPENDIX G – Student Questionnaire

Section A (Personal information)

A1. What is your grade level? (Please tick ONE of the following)

- 10th grade ☐
11th grade ☐
12th grade ☐

A2. How long have you been taught by using cooperative learning? (Please tick ONE of the following)

- Less than one semester ☐
One semester ☐
One year ☐
One and half year ☐
More than one and half year ☐

A3. Last year grade: (Please tick ONE of the following)

- 0-49 ☐
50-64 ☐
65-79 ☐
80-89 ☐
90-100 ☐

Section B (General perceptions of cooperative learning)

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.

(5= strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree)

B5. I like cooperative learning in the classroom.	5	4	3	2	1
B6. I prefer to be taught by cooperative learning compared to traditional methods such as lecture-style.	5	4	3	2	1
B7. I think it is possible to learn any subject with cooperative learning.	5	4	3	2	1
B8. I like the subject that is taught by using cooperative learning.	5	4	3	2	1

Would you like to add anything regarding your general perceptions of cooperative learning?.....

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

Section C (Academic outcomes)

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.

(5= strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree)

C. In comparing with lecture-style, using cooperative learning method in the class helped me with.....

C9. Understanding the content of the lesson better than other teaching methods such as lecture-style.	5	4	3	2	1
C10. Thinking skills.	5	4	3	2	1
C11. Problem-solving skills.	5	4	3	2	1
C12. Retention of the lesson content (memory).	5	4	3	2	1
C13. Concentration on task.	5	4	3	2	1
C14. Increasing my learning motivation.	5	4	3	2	1
C15. Encourage me to be an autonomous learner.	5	4	3	2	1
C16. Increasing my achievement test scores compared with lecture-style method.	5	4	3	2	1

Would you like to add anything regarding academic outcomes of cooperative learning?

.....

.....

.....

.....

Section D (Social outcomes)

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.

(5= strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree)

D- In comparing with lecture-style, using cooperative learning method in the class helped me with.....

D17. Interpersonal relationships.	5	4	3	2	1
D18. Increasing my self-esteem.	5	4	3	2	1
D19. Reducing anxiety.	5	4	3	2	1
D20. Increasing my enjoyment in learning.	5	4	3	2	1
D21. Improving my communicative skills.	5	4	3	2	1
D22. Improving my conflict-solving skills.	5	4	3	2	1

Would you like to add anything regarding social outcomes of cooperative learning?

.....

.....

.....

.....

.....

Section E (Perceptions regarding teachers' implementation procedures of cooperative learning)

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.

(5= strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree)

E23. I think teachers' implementation of cooperative learning procedures in the class is suitable.	5	4	3	2	1
E24. The materials that are given by the teacher are appropriate to my level.	5	4	3	2	1
E25. Assigning roles, such as writer and leader in teams, assists team discussion and work.	5	4	3	2	1
E26. I think the way that the teacher divides students into groups is suitable.	5	4	3	2	1
E27. Putting high and low-ability students in one group can just improve the learning of high-ability students.	5	4	3	2	1
E28. Putting high and low-ability students in one group can just improve the learning of low-ability students.	5	4	3	2	1
E29. Putting high and low-ability students in one group can improve the learning of both low-and high-ability students.	5	4	3	2	1
E30. The assessment is fair and suitable for cooperative learning activities.	5	4	3	2	1

E31. The optimum number of students in the group: (Please tick ONE of the following)

2 students ☐

3students ☐

4students ☐

5students ☐

more than 5 students ☐

Would you like to add anything regarding teachers' implementation procedures of cooperative learning?

.....

.....

.....

.....

Section F (Students' behaviours in group work)

Directions: Please indicate the extent to which you agree or disagree with each statement by encircling a number.

(5= strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree)

F32. The team members work cooperatively toward the same goals.	5	4	3	2	1
F33. In a cooperative group students care and help each other.	5	4	3	2	1
F34. The team members share resources such as Information resources, one pen and one paper to answer.	5	4	3	2	1
F35. The team members actively engage to discuss task material with each other.	5	4	3	2	1
F36. The team members provide and receive explanation.	5	4	3	2	1
F37. The team members encourage and praise each other.	5	4	3	2	1
F38. Each team members does his share of the teamwork.	5	4	3	2	1
F39. The team members check each other's understanding.	5	4	3	2	1
F40. Some team members do all or most of the group work and one or two students do nothing.	5	4	3	2	1
F41. The team members have communication skills such as actively listening, turn-taking and constructive criticism.	5	4	3	2	1
F42. The team members solve conflict when they do not agree with each other.	5	4	3	2	1
F43. The team members have decision-making skills such as considering all students' perspectives and use them to make decision.	5	4	3	2	1
F44. The team members have leadership skills such as giving clear direction and managing the meeting.	5	4	3	2	1
F45. The team members discuss the helpful and unhelpful of each member's actions in group work.	5	4	3	2	1
F46. The team members make decision about the actions should be continued or changed.	5	4	3	2	1

Would you like to add anything regarding students' behaviours in group work?

.....

.....

.....

.....

.....

Section G (Students' challenges and difficulties in cooperative learning)

G47- What are challenges and difficulties do you face in cooperative learning? **(Please tick any that apply from the following answers)**

- ☐ Some of my team members do not do their shared work.
- ☐ Some of my team members do not participate in team discussion.
- ☐ Cooperative learning leads to too much noise in class.
- ☐ Some of my team members are sometimes absent.
- ☐ Time for team discussions is too short.
- ☐ I am still unfamiliar with the cooperative learning method.
- ☐ The number of students in my group is not appropriate because it is a lot.
- ☐ Some of my team members dominate the group discussion.

Would you like to add anything regarding students' challenges and difficulties in cooperative learning?

.....

.....

.....

.....

H48. What would you suggest to improve the effectiveness of cooperative learning method?

.....

.....

.....

.....

Please tick:

I understand that all the information I provide is confidential and will be used for educational and research purposes only.

Thanks for completing this questionnaire

Follow-up interviews will be conducted and there is a need for your support to complete the research. If you are happy and willing to participate in the follow-up interviews, please write your contact details.

Name:

Phone number:

Email address:

APPENDIX H – Classroom Observation Sheets

Cooperative learning observation (Teachers - Observation Sheet 1)

Date:		Time:	
School:		Class:	
Teacher's name:		Number of students:	
Observational categories		Time	Description
Group variables	Group size		
	Assigning students' role		
	Assigning students to groups		
Environmental variables	Arranging the room		
	Can team members see each other		
	The space between groups		
	The availability of materials needed		

Staff variables	The objectives of the lesson			
	Explaining the task and the criteria for success			
	Monitoring and intervening			
Instructional five components of using CL	Specifying desired behaviour (social skills)	Yes		
		No		
	Structuring positive interdependence	Yes		
		No		
	Structuring individual accountability	Yes		
		No		
	Promotive interaction	Yes		
		No		
	Structuring group processing	Yes		
		No		
Assessment	Evaluating students' learning			
	Using rewards			

Cooperative learning observation (Students - Observation Sheet 2)

Date:	Time:
School:	Class:
Teacher's name:	Number of students:
Group number:	Number of students in a group:

Points to observe		Time	Description Notes
Positive interdependence	<ul style="list-style-type: none"> -The team members work cooperatively towards the same goals. - Students care and help each other. -The team members share resources such as information and materials. -The team members decide on a team name or symbol. 		
Promotive interaction	<ul style="list-style-type: none"> -The team members discuss with each other the task material. -The team members ask each other some questions. -The team members provide and receive explanation. -The team members encourage and praise each other. 		

Individual accountability	<ul style="list-style-type: none"> -Each team member does their share of the teamwork. -The team members check each other's understanding of the instructions and content. -Some team members do all or most of the group work and one or two students do nothing. -Each team member plays a specific role such as leader, checker, timer and writer. 		
Social skills	<ul style="list-style-type: none"> -The team members have communication skills such as actively listening, turn-taking and constructive criticism. -The team members solve conflicts when they do not agree with each other. -The team members have decision-making skills such as considering all students' perspectives and use them to make decision. -The team members have leadership skills such as giving clear directions and managing the group work. 		
Group processing	<ul style="list-style-type: none"> -The team members discuss how helpful or unhelpful were each member's actions in group work. -The team members make decisions about which actions should be continued or changed. 		

Cooperative learning observation (Observation Sheet 3)

Date:	Time:
School:	Class:
Teacher's name:	Number of students:

Time	Event/Notes

Time (start & finishing times)	Cooperative learning	Whole group

APPENDIX I – Ethical Approval Letter

University of Leicester Ethics Review Sign Off Document



To: **Mohammed Almulla**

Subject: Ethical Application Ref: **ma649-826e**
(Please quote this ref on all correspondence)

20/03/2015 15:54:14

School of Education

Project Title: **An Investigation of Teachers and Studentsâ€™™ Perceptions of Cooperative Learning: A Case Study in a Saudi Arabian High School**

Thank you for submitting your application which has been considered.

This study has been given ethical approval, subject to any conditions quoted in the attached notes.

Any significant departure from the programme of research as outlined in the application for research ethics approval (such as changes in methodological approach, large delays in commencement of research, additional forms of data collection or major expansions in sample size) must be reported to your Departmental Research Ethics Officer.

Approval is given on the understanding that the University Research Ethics Code of Practice and other research ethics guidelines and protocols will be compiled with

- <http://www2.le.ac.uk/institution/committees/research-ethics/code-of-practice>
- <http://www.le.ac.uk/safety/>

APPENDIX J - Example of data analysis of a teacher interview (T5)

First analytical stage

Pre-determined themes for research question 1 (Teachers' perceptions)
Teacher training
Definition and knowledge acquisition
Teachers' and students' roles
Factors affecting the use of cooperative learning
Advantages
Disadvantages

* Background information

Q1. Could you briefly talk about yourself and your teaching experiences?

I am 30 years old (Age). I graduated from King Faisal University, Faculty of Education, Department of mathematics (Bachelor) in 2008. I have taught in this school since I graduated at the university.

Q. How long have you been teaching?

Seven years (Teaching experience).

Q2. Can you tell me about your current teaching?

I teach math (Subject) in Years 11 and 12 (Classroom) high school. I teach 21 lessons per week (Number of lessons per week).

Q. How long have you been implementing cooperative learning in your class?

More than one year (CL experience).

Q3. Could you tell me about the teacher training you have received?

When I was studying at university, I was trained to use lecturing style (Insufficiency of pre-service, just training on lecture method). There was no module regarding teaching methods that could help us as teachers to know and implement different kinds of teaching methods such as cooperative learning (Insufficiency of pre-service, no Teaching Methods module in pre-service training).

Q. What teaching approach did you use before?

I used the method of lecturing (*Using lecture-style before training on CL*). The teaching of mathematics demands explanation and solving-problems. As such, teaching through the traditional method was tiresome to the teacher and boring.

Q. Why did not you use other teaching method?

I used lecture method because I had no idea about another teaching method. It was the only method I learned when I was a student at school. My teachers taught me through it, and when I went to university, it was the only method I learned (*Lack of information and insufficiency of pre-service training*). Further, the in-service training programmes that The Department of Education run, were much related to technical aspects rather than teaching methods, such as computer skills and school management. But none of them targeted teaching methods in particular (*In-service training not beneficial*). The training programmes should be on teaching methods because the teachers need them and teaching methods are essential for teachers more than something else. The teachers need to be trained on using cooperative learning because they do not understand and know cooperative learning without training (*The importance of training to implement CL*). Furthermore, those training programmes were not very beneficial because they focused on theoretical aspects more than practical ones (*Not beneficial training because of focusing just on theoretical aspects and no practical ones*).

Q. What type of training in cooperative learning did you have? How long?

The training program was divided into two parts. The first part I attended was in the first term. It was run for three days and then I attended another three-day program in the second term (*Attending full programme*). The program instructor gave us some questions and requested us to answer them by working cooperatively in groups and we watched some videos regarding using cooperative learning (*Practical aspects and CL experience*). Also, I visited some schools to watch a number of well-experienced teachers who used cooperative learning (*Visiting experienced teachers*). The training program also included attending some workshops and the trainer visited my class many times to watch my using of cooperative learning with the students and provided me useful feedback (*Trainers' visits and feedback*). It comprised theoretical and practical aspects. Unlike past programs, there was more concentration on the practice, which had great impact on our proficiency of the cooperative learning method (*The importance of practical aspects in addition to theoretical ones*).

Q. How do you comment on training programme?

It was very good and helpful (*The importance of training*).

Why?

Before I attended the training programme, I thought cooperative learning was only about setting group work. The training programme provided me a clear idea of the concept of cooperative learning and its important factors such as all students in a group should be connected with each other so they believe that they win together or lose together (*The importance of programme to change teacher's beliefs regarding CL concept*).

Q. How do you think this training programme can be improved?

The training programme was run in the evening. The running time of the programme was not convenient to some teachers, and they thought to withdraw from it (*Weaknesses of the training programme regarding time*). Therefore, the running time of the programme should be suitable for teachers that can encourage them to attend the programme. In addition, sometimes the instructor's specialization is Arabic Language, while I am a math teacher. In this case, it is not possible for him to give examples from maths. In the future, I suggest that the trainer and the trainee teachers should have the same specialization. This will be very useful (*Weaknesses of the training programme regarding the trainer's specialisation*).

Q4. How would you define cooperative learning before your training?

I viewed cooperative learning as a group of people working together on something and have common understanding of it (*CL as group work before training*).

Q5. How would you define cooperative learning after your training and implementation?

My understanding of cooperative learning has now differed from the past. Now, I see cooperative learning as groups of different abilities students who have a common objective to achieve through the accomplishment of a given task provided by the teacher. The group attempts to accomplish that task based on the assign a particular role to each member and cooperation among the group members. This work is achieved with consideration of a number of social skills in a way that facilitates the attainment of the group's objective (*CL definition changed after training and inclusion of some key component of cooperative learning*).

Q6. Before training, what was your perception of the best for students to acquire knowledge? What kinds of teaching activities you thought helped students to learn?

I used to believe that the more effort and activities the teacher spent and gave to the students, the more knowledge students would get. Therefore, I used to spend more efforts

in explaining the lesson and diversify its sources in order that the students get more knowledge (*Teacher-centred best for students to acquire knowledge before training*).

Q7. Currently, what is your perception of the best way for students to acquire knowledge? What kinds of teaching activities you think help students to learn?

The best method I see is the process of learning that is primarily based on student's effort to learn rather than the teacher's (*Student-centred best for students to acquire knowledge after training*).

Q8. Before training, how would you describe the role of the teacher in class? How would you explain the role of students in class?

I used to know that the teacher is responsible to explain the lesson content and he is the only source to presenter the information to students (*Teacher as presenter before training*) in the class, while the student's responsibility is only as a recipient of it to understand (*Passive students before training*). It was not a good method. In addition, students could not freely discuss or talk unless I ask them questions.

Q9. Currently, how would you describe the role of the teacher in class? How would you explain the role of students in class?

Now, the role of the teacher is to facilitate the students' learning so (*Teacher as facilitator after training*) I have to prepare the tasks that students will work on it, explain the tasks to students, observe students' work and provide help for students if they need it. The role of the student is to search for information and learn independently with his group mates (*Active students after training*). In the group, the students share information with their teammates, explain it to each other to understand the solution for the problem. Also, if a student made a mistake, his group mates would correct him. I feel that I can leave students in the class alone and they can manage to learn with each other and they do not need me. The students now are responsible for their learning. However, the method of lecturing was so boring to the teacher and the student as well, unlike cooperative learning, learning became more enjoyable and fun for teachers and students (*The enjoyment of using CL*).

Q10. What factors do you think affect the use of cooperative learning?

Among the factors that do not help promote cooperative learning is the compulsory assessment required by the Ministry of Education. This evaluation assesses the individual and not the collective performance of students. I have no freedom to modify this evaluation and use marks for groups' work (*Assessment strategy as a challenge*).

Q. Do you think this particular school context (for example, location, number of staff and students, teaching culture and traditions) has any impact on your views and use of CL?

No. I can use cooperative learning under any circumstance.

Q. Do you think your students' background (for example, social students, family history, and previous learning experiences) has any impact on the use of CL in class?

The students' long past experience with the lecturing method is a challenge for teachers (*Students' long past experience with lecture-style as a challenge*). Those students need training and time until they become familiar with using cooperative learning (*Students' training as a helpful factor*). Another factor that can have an effect on teacher's using cooperative learning is the quality of students. Using cooperative learning with sociable students coming from sociable educated families is much easier (*Quality of students as a challenge*). However, if the students are not like that, this does not make me avoid using cooperative learning but it will be more difficult.

Q11. What challenges could teachers face when they change their teaching methods from lecture style to cooperative learning?

At the beginning, there are some challenges. Using a single teaching method at school for a long time (a period of eight or nine years) makes it hard to change it (*Teacher's long past experience with lecture style as an initial challenge*). I was responsible for students' learning in the class so it was not easy to give this responsibility to students to learn by themselves (*Delegating responsibility to students as an initial challenge*). Also, the belief of the importance and benefits of using the cooperative learning method must fully come from the teacher. At the beginning, I was hesitant to use the cooperative learning method, as I was not confident of its benefits to students' learning (*Teachers' conviction of CL benefits as an initial challenge*). In addition, the comments of teachers who do not use cooperative learning occasionally frustrated me and students can get confused when I use cooperative learning with them and other teachers use lecturing method (*Negative effect of teachers who use lecture-style as an initial challenge*). Actually, changing teaching methods is not easy because a teacher needs to take theoretical and applied courses, pay visits to expert teachers in other schools, and get support from experts. All that place a burden on the teacher (*Extra workload as new teaching method*).

Q. How do you overcome these challenges?

Visiting teachers who are experienced in using cooperative learning in other schools, especially at the beginning, can play an important role in changing the teacher's negative

perceptions and strengthens his wish for the change (*Visiting experienced teachers as a helpful factor*). Also, visiting training instructor and regular follow-up for over a year are important in order to detect any arising problem encountered by trainee teachers and to suggest the best solutions to overcome them (*Visiting training instructor and regular follow-up as a helpful factor*). For example, I had an inactive student who was not participating in group work. The training instructor suggested some strategies that enhance the responsibility for students to participate in group's work.

Q. Are there other support factors that helped you at the beginning of change?

I thank the school principal who encouraged us to enroll in the training programme. In addition, I thank the school administration who provided the necessary facilities (*School principal and school administration support as a helpful factor*), such as the venue, required information, and all other essential tools. Another helpful factor is the support I receive from my colleague to make a plan for the lessons. He suggests some ideas for me in lesson plan or I also suggest some for him (*Shared views and closely working with colleagues*). Moreover, training students on cooperative learning before using it such as developing social skills is considerably useful (*Students' training as a helpful factor*). It helps students a lot especially who have not had any experience about cooperative learning at all. Also, at the beginning, the teacher should not implement cooperative learning for the whole class but it should be gradually used (*Gradually implementation of CL*). In addition, the incentives can play an important role with teachers at the beginning (*Incentives as a helpful factor*).

Q. What do you mean by incentives here?

I mean, teachers who use cooperative learning must be favorably distinguished over those who do not use it.

Q12. What are the academic advantages of using cooperative learning?

Bearing responsibility for learning is academically important for students in order to improve their learning even the teacher is not existed, the students will learn. In the past, the teacher is only the person who is responsible for students' learning in the class. Now, students are more in charge of their learning and the teacher encourages them to do that. Therefore, cooperative learning trains students to be responsible for their learning (*Bearing responsibility*).

Q. Do most of your students work productively in groups?

Yes.

Why?

Students in groups often ask for more problems to solve and exercises to do with their teammates, as the method of group discussion and cooperative climate encourage them for more learning. Also, students' aspire to achieve high levels of learning with their peers in the group (*Motivation*). Therefore, they often prepare for the lesson beforehand and read a lot in order to excel other groups (*Autonomy*). Hence, I certainly see that cooperative learning is a powerful incentive to students' learning motivation (*Motivation*).

Q. Do you think cooperative learning is helpful for your students' learning?

Of course.

Why?

In the traditional lecturing method, the teacher goes on explaining the lesson, while the student sits and passively receives the information without making much effort. However, in cooperative learning, the student is stimulated to think, make conclusions and cooperate with his teammates in order to gain the required information. All these activities help prompt student's thinking skills (*Thinking skills*). Using this thinking skills can also help to promote students' retention (*Retention*). This in turn has a positive effect on students' learning.

Q. Do you think cooperative learning affects students' performance in the final exam more than lecture style?

When using the method of traditional lecturing, only 6 to 8 students out of 30 may get high marks. However, with the cooperative learning method, you find only about 3 to 5 students whose marks are just within average, but the rest of the students have gained high marks (*Increased academic achievement*).

Q13. What are the social advantages of using cooperative learning?

It creates positive relations between the students and the teacher on one side and among the students on the other (*Positive relations*).

Q. How? Could you explain this please?

In the traditional lecturing method, the role of the teacher is to deliver the lesson, while the student hardly had any input in the classroom unless the teacher asks him a question. In cooperative learning, the teacher sometimes sits with students and talks to the group as a member of it. This creates good relationship between students and their teachers. In the traditional lecturing method, there is no chance for this to happen (*Positive relations*).

between the teacher and his students). As to the student-student relation, in the past, a student was not allowed to ask other students in the classroom, and if he did, he would be punished. In contrast, the teacher in cooperative learning encourages the student to hold a discussion with his teammates. This has helped to build up positive relations among students (*Positive relations among students*). In addition, in cooperative learning lesson, students can learn and use communication and social skills, such as listening attentively to each other when they work in groups showing gratitude to others (e.g. "I thank the group for their answer and I agreed with my teammates on.....") (*Social and communication skills*). Many students do not possess this skill, and they often tend to talk over each other. Having gained the skill of careful listening, they can use it inside and outside the classroom when communicating with people, friends and family members (*Social and communication skills*).

Q. Do you think your students enjoy working in groups?

Yes. In traditional method, some students are very worried to make a mistake especially when they are asked by the teacher. However, cooperative learning helps reduce anxiety among students. This is because the student in the group discusses problems with his group members and confirms the validity of the solution, or at worst the answer is the work of the group as a whole but not his own. This indeed has reduced students' worry in the class (*Reducing students' anxiety*). Also, their enjoyment of using cooperative learning increases (*Students' learning enjoyment*).

Q14. In your opinion, what are the disadvantages of using cooperative learning?

I think the only main problem of using cooperative learning is free-riding. When some students do not participate in group work and other students in the group do most of the work (*Free-riding*).

Q. How do you deal with this?

I address this problem by making a random selection of the student who gives the answer on behalf of the group (*Solving free-riding problem*). This leads all students in the group to participate and engage in group discussion in order to be able to present their work or answer the question when I randomly select one of them to do that.

Second analytical stage

After refining and reviewing the codes as appropriate, re-present the grouped data according to possible groupings of issues under the main themes.

Factors affecting the use of cooperative learning			
Challenges and difficulties affecting CL			Factors supporting CL
Administrative factors	Students' background	Initial challenges	

Also, I visited some schools to watch a number of well-experienced teachers who used cooperative learning (*Visiting experienced teachers*). The training program also included attending some workshops and the trainer visited my class many times to watch my using of cooperative learning with the students and provided me useful feedback (*Trainers' visits and providing feedback*).

Q10. What factors do you think affect the use of cooperative learning?

Among the factors that do not help promote cooperative learning is the compulsory assessment required by the Ministry of Education. This evaluation assesses the individual and not the collective performance of students. I have no freedom to modify this evaluation and use marks for groups' work (*Assessment strategy*).

Q. Do you think this particular school context (for example, location, number of staff and students, teaching culture and traditions) has any impact on your views and use of CL?

No. I can use cooperative learning under any circumstance.

Q. Do you think your students' background (for example, social students, family history, and previous learning experiences) has any impact on the use of CL in class?

The students' long past experience with the lecturing method is a challenge for teachers (*Students' long past experience with lecture-style*). Those students need training and time until they become familiar with using cooperative learning (*Students' training*). Another factor that can have an effect on teacher's using cooperative learning is the quality of students. Using cooperative learning with sociable students coming from sociable educated families is much easier (*Quality of students*). However, if the students are not like that, this does not make me avoid using cooperative learning but it will be more difficult.

Q11. What challenges could teachers face when they change their teaching methods from lecture style to cooperative learning?

At the beginning, there are some challenges. Using a single teaching method at school for a long time (a period of eight or nine years) makes it hard to change it (*Teacher's long past experience with lecture style*). I was responsible for students' learning in the class so it was not easy to give this responsibility to students to learn by themselves (*Delegating responsibility to students*). Also, the belief of the importance and benefits of using the cooperative learning method must fully come from the teacher. At the beginning, I was hesitant to use the cooperative learning method, as I was not confident of its benefits to students' learning (*Teachers' conviction of CL benefits*). In addition, the comments of teachers who do not use cooperative learning occasionally frustrated me and students can get confused when I use cooperative learning with them and other teachers use lecturing method (*Negative effect of teachers who use lecture-style*). Actually, changing teaching methods is not easy because a teacher needs to take theoretical and applied courses, pay visits to expert teachers in other schools, and get support from experts. All that place a burden on the teacher (*Extra workload as new teaching method*).

Q. How do you overcome these challenges?

Visiting teachers who are experienced in using cooperative learning in other schools, especially at the beginning, can play an important role in changing the teacher's negative perceptions and strengthens his wish for the change (*Visiting experienced teachers*). Also, visiting training instructor and regular follow-up for over a year are important in order to detect any arising problem encountered by trainee teachers and to suggest the best solutions to overcome them (*Visiting training instructor and regular follow-up*). For example, I had an inactive student who was not participating in group work. The training instructor suggested some strategies that enhance the responsibility for students to participant in group's work.

Q. Are there other support factors that helped you at the beginning of change?

I thank the school principal who encouraged us to enroll in the training programme. In addition, I thank the school administration who provided the necessary facilities (*School principal and school administration support*), such as the venue, required information, and all other essential tools. Another helpful factor is the support I receive from my colleague to make a plan for the lessons. He suggests some Ideas for me in lesson plan or I also suggest some for him (*Shared views and closely working with colleagues*). Moreover, training students on cooperative learning before using it such as developing social skills is

considerably useful (*Students' training*). It helps students a lot especially who have not had any experience about cooperative learning at all. Also, at the beginning, the teacher should not implement cooperative learning for the whole class but it should be gradually used (*Gradually implement CL*). In addition, the incentives can play an important role with teachers at the beginning (*Incentives*).

Third analytical stage

Analyse the remaining data by establishing connections of similarities and differences between elements in the data and re-analysis of the remaining data for possible relocation into the existing themes, merging, or the creation of new themes. For example, the theme “**teachers' and students' roles**” was replaced by the theme “**classroom roles, responsibilities and authority**”.

Q8. Before training, how would you describe the role of the teacher in class? How would you explain the role of students in class?

I used to know that the teacher is responsible to explain the lesson content (*Teacher's responsibility as delivering information before training*) and he is the only source to presenter the information to students (*Teacher as presenter before training*) in the class, while the student's responsibility is only as a recipient of it to understand (*Passive students before training*). It was not a good method. In addition, students could not freely discuss or talk unless I ask them questions (*Students have not any authority before training*).

Q9. Currently, how would you describe the role of the teacher in class? How would you explain the role of students in class?

Now, the role of the teacher is to facilitate the students' learning so (*Teacher as facilitator after training*) I have to prepare the tasks that students will work on it, explain the tasks to students, observe students' work and provide help for students if they need it (*Teacher's responsibilities after training*). The role of the student is to search for information and learn independently with his group mates (*Active students after training*). In the group, the students share information with their teammates, explain it to each other to understand the solution for the problem. Also, if a student made a mistake, his group mates would correct him (*Students' responsibilities after training*). I feel that I can leave students in the class alone and they can manage to learn with each other and they do not need me. The students now are responsible for their learning (*Students have some authority after training*).

APPENDIX K – Questionnaire Findings

Table 1: Students' perceptions of academic outcomes

In comparing with lecture-style, using CL method in the class helped me with.....	The class	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Understanding the content of the lesson better than other teaching methods such as lecture-style	Year 10	8 (24.2%)	17 (51.5%)	5 (15.2%)	2 (6.1%)	1 (3.0%)
	Year 11	12 (38.7%)	13 (41.9%)	3 (9.7%)	1 (3.2%)	2 (6.5%)
	Year 12	10 (35.7%)	13 (46.4%)	4 (14.3%)	1 (3.6%)	0 (0.0%)
Thinking skills	Year 10	11 (33.3%)	13 (39.4%)	5 (15.2%)	4 (12.1%)	0 (0.0%)
	Year 11	9 (29.0%)	15 (48.4%)	5 (16.1%)	2 (6.5%)	0 (0.0%)
	Year 12	8 (28.6%)	13 (46.4%)	4 (14.3%)	3 (10.7%)	0 (0.0%)
Problem-solving skills	Year 10	10 (30.3%)	12 (36.4%)	7 (21.2%)	2 (6.1%)	2 (6.1%)
	Year 11	7 (22.6%)	13 (41.9%)	10 (32.3%)	1 (3.2%)	0 (0.0%)
	Year 12	8 (28.6%)	11 (39.3%)	9 (32.1%)	0 (0.0%)	0 (0.0%)
Retention of the lesson content (memory)	Year 10	11 (33.3%)	15 (45.5%)	4 (12.1%)	2 (6.1%)	1 (3.0%)
	Year 11	8 (25.8%)	15 (48.4%)	4 (12.9%)	4 (12.9%)	0 (0.0%)
	Year 12	6 (21.4%)	14 (50.0%)	3 (10.7%)	4 (14.3%)	1 (3.6%)
Concentration on task	Year 10	9 (27.3%)	14 (42.4%)	5 (15.2%)	3 (9.1%)	2 (6.1%)
	Year 11	10 (32.3%)	13 (41.9%)	5 (16.1%)	2 (6.5%)	1 (3.2%)
	Year 12	7 (25.0%)	12 (42.9%)	6 (21.4%)	3 (10.7%)	0 (0.0%)
Increasing my learning motivation	Year 10	5 (15.2%)	17 (51.5%)	4 (12.1%)	5 (15.2%)	2 (6.1%)
	Year 11	9 (29.0%)	13 (41.9%)	5 (16.1%)	3 (9.7%)	1 (3.2%)
	Year 12	7 (25.0%)	12 (42.9%)	6 (21.4%)	3 (10.7%)	0 (0.0%)
Encourage me to be an autonomous learner	Year 10	7 (21.2%)	15 (45.5%)	6 (18.2%)	3 (9.1%)	2 (6.1%)
	Year 11	10 (32.3%)	13 (41.9%)	4 (12.9%)	3 (9.7%)	1 (3.2%)
	Year 12	6 (21.4%)	17 (60.7%)	3 (10.7%)	1 (3.6%)	1 (3.6%)
Increasing my achievement test scores compared with lecture-style method	Year 10	5 (15.2%)	7 (21.2%)	17 (51.5%)	3 (9.1%)	1 (3.0%)
	Year 11	10 (32.3%)	13 (41.9%)	6 (19.4%)	2 (6.5%)	0 (0.0%)
	Year 12	7 (25.0%)	15 (53.6%)	4 (14.3%)	1 (3.6%)	1 (3.6%)

Table 2: Students' perceptions of social outcomes

In comparing with lecture-style, using CL method in the class helped me with.....	The class	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Interpersonal relationships	Year 10	17 (51.5%)	9 (27.3%)	4 (12.1%)	0 (0.0%)	3 (9.1%)
	Year 11	15 (48.4%)	11 (35.5%)	3 (9.7%)	1 (3.2%)	1 (3.2%)
	Year 12	13 (46.4%)	9 (32.1%)	4 (14.3%)	2 (7.1%)	0 (0.0%)
Increasing my self-esteem	Year 10	10 (30.3%)	15 (45.5%)	4 (12.1%)	3 (9.1%)	1 (3.0%)
	Year 11	11 (35.5%)	14 (45.2%)	6 (19.4%)	0 (0.0%)	0 (0.0%)
	Year 12	12 (42.9%)	10 (35.7%)	4 (14.3%)	2 (7.1%)	0 (0.0%)
Reducing anxiety	Year 10	7 (21.2%)	19 (57.6%)	4 (12.1%)	3 (9.1%)	0 (0.0%)
	Year 11	9 (29.0%)	15 (48.4%)	5 (16.1%)	2 (6.5%)	0 (0.0%)
	Year 12	7 (25.0%)	14 (50.0%)	6 (21.4%)	1 (3.6%)	0 (0.0%)
Increasing my enjoyment in learning	Year 10	12 (36.4%)	14 (42.4%)	4 (12.1%)	3 (9.1%)	0 (0.0%)
	Year 11	13 (41.9%)	11 (35.5%)	6 (19.4%)	1 (3.2%)	0 (0.0%)
	Year 12	8 (28.6%)	15 (53.6%)	3 (10.7%)	1 (3.6%)	1 (3.6%)
Improving my communicative skills	Year 10	13 (39.4%)	12 (36.4%)	5 (15.2%)	2 (6.1%)	1 (3.0%)
	Year 11	13 (41.9%)	15 (48.4%)	2 (6.5%)	1 (3.2%)	0 (0.0%)
	Year 12	10 (35.7%)	14 (50.0%)	4 (14.3%)	0 (0.0%)	0 (0.0%)
Improving my conflict-solving skills	Year 10	8 (24.2%)	16 (48.5%)	5 (15.2%)	2 (6.1%)	2 (6.1%)
	Year 11	9 (29.0%)	15 (48.4%)	6 (19.4%)	0 (0.0%)	1 (3.2%)
	Year 12	12 (42.9%)	10 (35.7%)	4 (14.3%)	1 (3.6%)	1 (3.6%)

Table 3: Students' perceptions of teachers' implementation of cooperative learning

Questionnaire statements	The class	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
I think teachers' implementation of cooperative learning procedures in the class is suitable	Year 10	7 (21.2%)	17 (51.5%)	8 (24.2%)	1 (3.0%)	0 (0.0%)
	Year 11	11 (35.5%)	12 (38.7%)	5 (16.1%)	1 (3.2%)	2 (6.5%)
	Year 12	11 (39.3%)	11 (39.3%)	4 (14.3%)	1 (3.6%)	1 (3.6%)
The materials that are given by the teacher are appropriate to my level	Year 10	12 (36.4%)	15 (45.5%)	4 (12.1%)	2 (6.1%)	0 (0.0%)
	Year 11	12 (38.7%)	12 (38.7%)	4 (12.9%)	3 (9.7%)	0 (0.0%)
	Year 12	13 (46.4%)	11 (39.3%)	2 (7.1%)	1 (3.6%)	1 (3.6%)
Assigning roles, such as writer and leader in teams, assists team discussion and work	Year 10	11 (33.3%)	15 (45.5%)	5 (15.2%)	1 (3.0%)	1 (3.0%)
	Year 11	7 (22.6%)	17 (54.8%)	4 (12.9%)	1 (3.2%)	2 (6.5%)
	Year 12	9 (32.1%)	12 (42.9%)	4 (14.3%)	3 (10.7%)	0 (0.0%)
I think the way that the teacher divides students in groups is suitable	Year 10	12 (36.4%)	13 (39.4%)	5 (15.2%)	2 (6.1%)	1 (3.0%)
	Year 11	7 (22.6%)	15 (48.4%)	5 (16.1%)	2 (6.5%)	2 (6.5%)
	Year 12	9 (32.1%)	10 (35.7%)	4 (14.3%)	2 (7.1%)	3 (10.7%)
Putting high and low-ability students in one group can just improve the learning of high-ability students	Year 10	4 (12.1%)	2 (6.1%)	2 (6.1%)	13 (39.4%)	12 (36.4%)
	Year 11	1 (3.2%)	3 (9.7%)	5 (16.1%)	8 (25.8%)	14 (45.2%)
	Year 12	2 (7.1%)	2 (7.1%)	3 (10.7%)	9 (32.1%)	12 (42.9%)
Putting high and low-ability students in one group can just improve the learning of low-ability students	Year 10	2 (6.1%)	6 (18.2%)	3 (9.1%)	7 (21.2%)	15 (45.5%)
	Year 11	5 (16.1%)	2 (6.5%)	4 (12.9%)	10 (32.3%)	10 (32.3%)
	Year 12	3 (10.7%)	2 (7.1%)	3 (10.7%)	14 (50.0%)	6 (21.4%)
Putting high- and low-ability students in one group can improve the learning of both low- and high-ability students	Year 10	19 (57.6%)	10 (30.3%)	3 (9.1%)	0 (0.0%)	1 (3.0%)
	Year 11	16 (51.6%)	9 (29.0%)	3 (9.7%)	2 (6.5%)	1 (3.2%)
	Year 12	17 (60.7%)	6 (21.4%)	4 (14.3%)	0 (0.0%)	1 (3.6%)
The assessment is fair and suitable for cooperative learning activities	Year 10	7 (21.2%)	12 (36.4%)	8 (24.2%)	3 (9.1%)	3 (9.1%)
	Year 11	8 (25.8%)	13 (41.9%)	7 (22.6%)	3 (9.7%)	0 (0.0%)
	Year 12	10 (35.7%)	10 (35.7%)	5 (17.9%)	2 (7.1%)	1 (3.6%)

Table 4: Students' perceptions about their behaviours in group work in Year 10

Questionnaire statements	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
The team members work cooperatively toward the same goals	6 (18.2%)	16 (48.5%)	6 (18.2%)	4 (12.1%)	1 (3.0%)
In a cooperative group students care and help each other	10 (30.3%)	13 (39.4%)	6 (18.2%)	3 (9.1%)	1 (3.0%)
The team members share resources such as Information resources, one pen and one paper to answer	2 (6.1%)	5 (15.2%)	6 (18.2%)	13 (39.4%)	7 (21.2%)
The team members actively engage to discuss task material with each other	14 (42.4%)	9 (27.3%)	7 (21.2%)	2 (6.1%)	1 (3.0%)
The team members provide and receive explanation	10 (30.3%)	12 (36.4%)	8 (24.2%)	1 (3.0%)	2 (6.1%)
The team members encourage and praise each other	11 (33.3%)	13 (39.4%)	5 (15.2%)	2 (6.1%)	2 (6.1%)
Each team members does his share of the teamwork	6 (18.2%)	15 (45.5%)	6 (18.2%)	2 (6.1%)	4 (12.1%)
The team members check each other's understanding	11 (33.3%)	13 (39.4%)	2 (6.1%)	5 (15.2%)	2 (6.1%)
Some team members do all or most of the group work and one or two students do nothing	4 (12.1%)	5 (15.2%)	4 (12.1%)	7 (21.2%)	13 (39.4%)
The team members have communication skills such as actively listening, turn taking and constructive criticism	17 (51.5%)	10 (30.3%)	4 (12.1%)	1 (3.0%)	1 (3.0%)
The team members solve conflict when they do not agree with each other	12 (36.4%)	13 (39.4%)	6 (18.2%)	1 (3.0%)	1 (3.0%)
The team members have decision-making skills such as considering all students' perspectives and use them to make decision	9 (27.3%)	15 (45.5%)	6 (18.2%)	1 (3.0%)	2 (6.1%)
The team members have leadership skills such as giving clear direction and managing the meeting	10 (30.3%)	13 (39.4%)	6 (18.2%)	3 (9.1%)	1 (3.0%)
The team members discuss the helpful and unhelpful of each member's actions in group work	3 (9.1%)	15 (45.5%)	5 (15.2%)	6 (18.2%)	4 (12.1%)
The team members make decision about the actions should be continued or changed	4 (12.1%)	13 (39.4%)	7 (21.2%)	5 (15.2%)	4 (12.1%)

Table 5: Students' perceptions about their behaviours in group work in Year 11

Questionnaire statements	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
The team members work cooperatively toward the same goals	9 (29.0%)	15 (48.4%)	4 (12.9%)	2 (6.5%)	1 (3.2%)
In a cooperative group students care and help each other	14 (45.2%)	12 (38.7%)	4 (12.9%)	1 (3.2%)	0 (0.0%)
The team members share resources such as Information resources, one pen and one paper to answer	4 (12.9%)	5 (16.1%)	5 (16.1%)	7 (22.6%)	10 (32.3%)
The team members actively engage to discuss task material with each other	14 (45.2%)	11 (35.5%)	4 (12.9%)	2 (6.5%)	0 (0.0%)
The team members provide and receive explanation	6 (19.4%)	18 (58.1%)	4 (12.9%)	2 (6.5%)	1 (3.2%)
The team members encourage and praise each other	13 (41.9%)	10 (32.3%)	3 (9.7%)	4 (12.9%)	1 (3.2%)
Each team members does his share of the teamwork	10 (32.3%)	14 (45.2%)	5 (16.1%)	1 (3.2%)	1 (3.2%)
The team members check each other's understanding	12 (38.7%)	12 (38.7%)	5 (16.1%)	1 (3.2%)	1 (3.2%)
Some team members do all or most of the group work and one or two students do nothing	3 (9.7%)	2 (6.5%)	4 (12.9%)	17 (54.8%)	5 (16.1%)
The team members have communication skills such as actively listening, turn taking and constructive criticism	9 (29.0%)	18 (58.1%)	2 (6.5%)	1 (3.2%)	1 (3.2%)
The team members solve conflict when they do not agree with each other	7 (22.6%)	16 (51.6%)	5 (16.1%)	2 (6.5%)	1 (3.2%)
The team members have decision-making skills such as considering all students' perspectives and use them to make decision	11 (35.5%)	13 (41.9%)	4 (12.9%)	2 (6.5%)	1 (3.2%)
The team members have leadership skills such as giving clear direction and managing the meeting	7 (22.6%)	17 (54.8%)	6 (19.4%)	1 (3.2%)	0 (0.0%)
The team members discuss the helpful and unhelpful of each member's actions in group work	6 (19.4%)	14 (45.2%)	4 (12.9%)	5 (16.1%)	2 (6.5%)
The team members make decision about the actions should be continued or changed	11 (35.5%)	10 (32.3%)	6 (19.4%)	3 (9.7%)	1 (3.2%)

Table 6: Students' perceptions about their behaviours in group work in Year 12

Questionnaire statements	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
The team members work cooperatively toward the same goals	13 (46.4%)	10 (35.7%)	2 (7.1%)	3 (10.7%)	0 (0.0%)
In a cooperative group students care and help each other	15 (53.6%)	9 (32.1%)	2 (7.1%)	2 (7.1%)	0 (0.0%)
The team members share resources such as Information resources, one pen and one paper to answer	1 (3.6%)	6 (21.4%)	4 (14.3%)	6 (21.6%)	11 (39.3%)
The team members actively engage to discuss task material with each other	8 (28.6%)	15 (53.6%)	3 (10.7%)	1 (3.6%)	1 (3.6%)
The team members provide and receive explanation	8 (28.6%)	13 (46.4%)	3 (10.7%)	4 (14.3%)	0 (0.0%)
The team members encourage and praise each other	9 (32.1%)	13 (46.4%)	3 (10.7%)	3 (10.7%)	0 (0.0%)
Each team members does his share of the teamwork	10 (35.7%)	11 (39.3%)	5 (17.9%)	2 (7.1%)	0 (0.0%)
The team members check each other's understanding	9 (32.1%)	12 (42.9%)	4 (14.3%)	2 (7.1%)	1 (3.6%)
Some team members do all or most of the group work and one or two students do nothing	1 (3.6%)	3 (10.7%)	5 (17.9%)	12 (42.9%)	7 (25.0%)
The team members have communication skills such as actively listening, turn taking and constructive criticism	10 (35.7%)	13 (46.4%)	3 (10.7%)	2 (7.1%)	0 (0.0%)
The team members solve conflict when they do not agree with each other	8 (28.6%)	14 (50.0%)	4 (14.3%)	1 (3.6%)	1 (3.6%)
The team members have decision-making skills such as considering all students' perspectives and use them to make decision	8 (28.6%)	13 (46.4%)	5 (17.9%)	1 (3.6%)	1 (3.6%)
The team members have leadership skills such as giving clear direction and managing the meeting	11 (39.3%)	9 (32.1%)	5 (17.9%)	3 (10.7%)	0 (0.0%)
The team members discuss the helpful and unhelpful of each member's actions in group work	9 (32.1%)	10 (35.7%)	5 (17.9%)	2 (7.1%)	2 (7.1%)
The team members make decision about the actions should be continued or changed	6 (21.4%)	12 (42.9%)	8 (28.6%)	1 (3.6%)	1 (3.6%)

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