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Factors influencing the effective use of an online collaborative learning environment as experienced by Saudi male students in King Abdulaziz University

A thesis submitted

By

Bander Alzaidy

To

SCHOOL OF EDUCATION

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Abstract

This research explores and identifies factors that may influence the effective use of the Online Collaborative Learning (OCL) environment in the Saudi higher education context. Within this setting, the current OCL is in its early stages of adoption. Therefore, this study is a platform to assess how this environment can be used more effectively to improve teaching and learning, as well as identifying any underlying factors that may affect the students' overall learning experience when using the OCL environment. In doing so, the study provides an important contribution for educational institutes and policy makers, by drawing attention to factors that could be addressed to improve pedagogy and the effectiveness of the learning environment. In order to gain a clear insight into both the potential and the challenges that ensue when using OCL setting in Saudi higher education, the study investigates the experience of students: the participants (n=729) are Saudi male undergraduate distance students in their preparatory year, attending King Abdulaziz University (KAU). The participants have been exposed to the OCL environment and therefore are in a position to provide incisive information pertaining to its overall use, including underlying factors and challenges. The research methodology for this study adopts a sequential mixed-methods approach. The data reveals certain factors that are significantly influencing how effectively the OCL setting can be used within this context. Among those factors identified, the technology related aspects (i.e. Internet speed and technical support), the student characteristics (i.e. their awareness and willingness) and the tutors' roles (i.e. their attitudes towards a collaborative learning environment as well as their ICT skills) were viewed as significant. It is envisaged that the findings from this study may be used to assist in the development and implementation of OCL environments, not only in this context, but also within diverse contexts and environments found in developing countries.

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Abbreviations and terms used

Information and Communication Technology (ICT)

King Abdulaziz University (KAU)

Learning Management System (LMS)

National Centre for E-learning and Distance Learning (NCEL)

Online Collaborative Learning (OCL)

Chapter One: Background

1.1 Introduction

Developments in Information and Communication Technology (ICT) have had a significant impact on many aspects of modern society: in politics, commerce and education (Mackay et al., 2013). Consequently, the online environment, with the support of new technology, has the potential to enable learners to collaborate and interact more effectively with one another and in groups, without the limitations of place or time (Williams, 2009). Fung (2004, p.136) states that "the online environment has great potential for fostering collaborative learning among distance learners who are separated in time and space". In such environments, knowledge is regarded as the most important resource for economic and social progression; thus, the subsequent distribution of expert knowledge can provide greater improvements for learning (Lehtinen et al., 1999).

In light of this, Mackay et al. (2013) propose that throughout history, the development of technology has played a monumental role in shaping our conception of human cognition and learning. Lipponen (2002) asserts that such a parallel between technology and our psychological understanding is evident within the domain of online learning, where technology can be applied to, and associated with, philosophy, psychology and pedagogy. Consequently, technology has generated a considerable amount of interest from experts from diverse disciplines to engage in this area of study, such as software designers and developers, learning theorists, educational psychologists and sociologists (ibid). Within the educational domain, there has been a continuous effort and focus on shifting from a teacher-centred approach to a more student-centred approach. In turn, collaborative learning has been highlighted as a direct method that can be used to achieve this (Sen & Passey, 2012).

Moreover, the level of quality within the collaboration of the learners and instructor is also raised as a result of ICT and its ability to facilitate social interaction (Brodahl et al., 2011). This progression has the potential to increase the accessibility, relevance and quality of education and through the presence of online platforms, an innovative approach to designing learning environments has been established (Jacobson & Kozma, 2012; Kozma, 2008). This has further generated opportunities for a meaningful and powerful learning experience through collaboration between instructors and students, or between the students themselves (Linn et al., 2004; Stahl et al., 2006).

In addition, collaborative learning has the capability to equip learners with the necessary skills to bridge education and employment, as the learning experience is improved by engaging learners with one another to generate new ideas and perspectives in ways that can develop skills that are useful within the work environment (Kitchen & McDougall, 1998; Dillenbourg, 1999; Johnson & Johnson, 1999; Stahl, 2006). These are all integral features of collaborative learning which is grounded in the social and constructivist theory of learning (Vygotsky, 1978; Geary, 1995). This theory states that students should play an active role within the learning process and construct knowledge for themselves as they learn (Geary, 1995; Glasersfeld, 2006).

Furthermore, the online environment is amongst the most effective approaches for collaborative learning whereby the sharing of information and knowledge progressively develops new competencies within learners (Stahl, 2006). However, despite its potential, when addressing the Online Collaborative Learning (OCL) environment, certain factors have been highlighted that may influence its overall effectiveness when it is implemented within an educational context (Palloff & Pratt, 2007; O'Neill et al., 2011; Razali et al., 2015). This is due to the complex interaction between contextual variables (Dillenbourg & Schneider, 1995);

hence it is vital to highlight these factors in order to identify how they can be overcome, or indeed be maintained and/or regulated.

Although the adoption of a collaborative approach within an online setting has been applied on a global scale, it is still regarded as a relatively new concept within the educational system in Saudi Arabia (Alkhalaf et al., 2013). This is due to a lack of research that explores the use of OCL environments within higher education, which is highly limited (Al-Ismaiel, 2013). In most Arab countries, including Saudi Arabia, traditional learning methods are adopted by most of the educational institutes (Al-Ammary, 2013; Al-Ismaiel, 2013). Consequently, this restricts the level of opportunity for such learners to experience and engage in collaborative and interactive learning environments. Thus, this research has extracted factors from theoretical and practical studies and seeks to investigate how they influence the effective use of the OCL environment as experienced by Saudi distant undergraduate students in King AbdulAziz University (KAU). The next section elaborates upon this by addressing the rationale for this research.

1.2 Online and Distance Learning

There is not one particular definition for the term 'online learning', as a number of different definitions have been put forth. The Commission of the European Communities (2001, p. 2) defines online learning as "the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaborations". While Schlosser and Simonson (2009, p.1) have defined distance education as, "institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors". The use of technology and online learning has changed the way teachers can convey information to their students.

1.3 Rationale for this study

By enhancing students' critical thinking skills and developing their communication and social interaction skills, the OCL environment may provide learners with the ability to work and collaborate as part of a team, this is regarded as a vital skill to ensure success within any employment role (Palloff & Pratt, 2005; Ally, 2008). Thus, a crucial aspect in implementing an effective OCL environment is that it has the potential to prepare learners with a solid foundation when entering the workforce (Costello et al., 2014; Dede, 1996).

This is particularly the case for those who come from traditional instructivist cultures, wherein the perception of the education system is heavily based upon memorization of received knowledge and which is primarily used for the purpose of passing examination (Porcaro, 2011). The collaborative approach within an online setting is therefore an effective approach that may positively impact upon students' learning in developing countries (Kahiigi et al., 2008; Nihuka & Voogt, 2012). Nevertheless, the significance of certain factors influencing students' opportunities or a willingness to learn collaboratively remains under-researched (Östlund, 2008).

Furthermore, within the context of Saudi Arabia, there has been an increasing number of studies into the implementation of online learning in higher education. Much of this has explored the factors that distinguish this approach from other learning approaches, whilst also highlighting the strengths and weaknesses of online learning, as well as analysing those factors that can facilitate or hinder its adoption in education (Al-Harbi, 2010; Algahtani, 2011). After exploring research pertaining to online learning environments within the Saudi higher educational context, the study conducted by Alkhalaf et al. (2013) provided a deeper insight into how the collaborative learning approach could potentially provide the necessary means to enhance the effectiveness of existing online environments and make it popular amongst learners. This subsequently triggered an area of research interest and subject of

research in response to this gap, which is to identify the factors that may influence the effective use of the OCL environment amongst Saudi students in higher education.

However, after extensive investigation, to my knowledge there is no empirical evidence that has investigated factors influencing the effectiveness of OCL environments as experienced by Saudi students in higher education within Saudi Arabia. Thus, this present situation calls for strategies to explore and comprehend the factors that influence the effective use, or rather, the ineffective use of OCL environments. Moreover, although previous studies have reported the benefits of collaborative learning for online learners (Jacobson & Kozma, 2012; Linn, Davis & Bell, 2004; Stahl et al., 2006; Stahl, 2006; Niu & van Aalst, 2009), there are still many issues concerning the implementation of the OCL environment. The literature that was initially reviewed with regard to this area of study highlighted various factors that could influence the effective use of the OCL environment. Each of these studies only sought to consider a certain number of factors, whereas this study will seek to explore these collectively as experienced by the students. This is crucial as it can aid administrators to improve the overall quality of the learning process (Dewiyanti et al., 2007). The purpose behind the implementation of the OCL environment was to increase levels of educational attainment by introducing changes in teaching and in learning processes and strategies (Rodríguez et al., 2010). Thus, by reviewing the issues of how the OCL environment is implemented in Western higher education institutes, it can potentially provide deeper insight into how this type of setting can be adopted within the context of Saudi Arabia.

As the rationale for this study has been outlined, the next section will explore how this study will be conducted by setting out the research questions and objectives.

1.4 Research questions and objectives

The study seeks to explore and understand the underlying factors that influence the effectiveness of existing OCL environments in the Saudi higher education context. Essentially, this research project aims to answer the following research question:

What are the factors influencing the effective use of the online collaborative learning environment, as experienced by male undergraduate distance learners in Saudi higher education?

To answer this effectively, four sub-questions have also been outlined:

1) To what extent does the existing infrastructure and LMS provide a reliable platform in facilitating the collaborative approach within an online environment from the students' experience?

2) What are the students' characteristics that may influence the collaborative approach to occur within the existing online environment?

3) What are the tutors' roles that may influence the effective use of the collaborative approach within an online environment from the students' experience?

4) From the students' experience, to what extent do the course characteristics influence the effective use of the collaborative approach within an online environment?

Upon analysis of these factors, one key objective of this research is to then provide effective guidelines for policy makers within educational institutes in order to improve the practical application and management of the OCL environment in pedagogy and technology. This will ultimately equip learners with the relevant skills required when they leave formal education and move into employment.

After initially reviewing the existing literature and classifying relevant factors, a summary of the overall research objectives is presented in Table 1.1, in addition to specific research questions that correspond to each objective.

Table1.1 A questions methods matrix (horses for courses) adopted from Denscombe, 1988

Objectives	***Research questions***	***The instruments to be used***
To explore the reliability of the platform	- To what extent does the existing infrastructure and LMS provide a reliable platform in facilitating the collaborative approach within an online environment from the students' experience?	Questionnaire Interview
To determine students' characteristics that may influence OCL	-What are the students' characteristics that may influence the collaborative approach to occur within the existing online environment?	Questionnaire Interview
To determine the tutors' roles and how they may influence the effective use of the OCL	- What are the tutors' roles that may influence the effective use of the collaborative approach within an online environment from the students' experience?	Questionnaire Interview
To determine the course characteristics that may influence the effective use of the OCL	- From the students' experience, to what extent do the course characteristics influence the effective use of the OCL environment?	Questionnaire Interview

As this study takes place in Saudi Arabia, it is useful to contextualise and frame this research within the confines of this particular context.

1.5 Context of the study

1.5.1 Saudi Arabia: location, population, culture, economy and education

Saudi Arabia is located at the furthermost part of Southwest Asia, covering the great bulk of the Arabian Peninsula. It is bordered by many other Arab countries such as Kuwait, Iraq and Jordan to the north, Yemen and Oman to the south, as well as the United Arab Emirates, Qatar and Bahrain to the east. Moreover, it has frontiers on the Arabian Gulf in the east and the Red Sea to the west (Ministry of Culture and Information, 2015; Al-Harbi, 2010).

The country's population in 2015 was estimated to be approximately 21 million citizens, with 9 million additional foreigners (Minister of Economy & Planning, 2015). It is also useful to note that the median age of the Saudi population is estimated at 17.3 years, which means that one-half of the population is at or below 18 years of age (The Saudi Eighth Development Plan, 2005-2009). The cultural aspects of Saudi Arabia, predominantly revolve around the religion of Islam. For instance, the holiest Islamic sites, Mecca and Medina, are located in the country. Subsequently, Saudi culture has been strengthened and developed within the framework of the legislation and teachings of Islam which is the official religion of the country; it frames all aspects of life (Ministry of Culture and Information, 2015).

Aside from the religious components of Saudi Arabia, its free market economy has undergone remarkable changes in a relatively short period of time. It has evolved from a basic agricultural society into a regional and global economy with a modern infrastructure. Petroleum is an integral part of the Saudi economy as it is one of the world's largest producers and exporters of oil. In recent decades, the Kingdom has increasingly diversified its economy, and today produces and exports a variety of industrial goods all over the globe (Minister of Economy & Planning, 2015).

With regard to the area of education in Saudi Arabia, this has undergone many changes. However, because Islam has formulated many of the guidelines within this context, the role of education within the Islamic framework places a strong emphasis on the importance of learning for both males and females (MoE, 2015). Moreover, since the establishment of the state in 1932, the educational system has undergone significant changes and there are now 28 public universities and 10 private universities, as well as more than 25,000 schools and a significant number of colleges and other institutions throughout the country. In addition, free education is provided for all citizens, and books and health services are accessible to everyone. Moreover, while the teachings of Islam are at the core of Saudi

education, there is sufficient diversity within the educational system to focus on the fields of art and science which helps to prepare citizens to cope with modern life and work within a global economy (Al-Sulaimani, 2010; MoE, 2015).

1.5.2 Higher Education, Online and Distance Learning in Saudi Arabia

Today's society is one that is highly globalized, competitive and continuously evolving, where it is accepted that factors such as knowledge, learning and education are influential in shaping the future of an individual and a country as a whole (MoE, 2015). Moreover, a number of structural changes have occurred in higher education institutes across the globe due to the increased role of ICT in learning and pedagogy (Singh et al., 2005). However, a number of elements, including the rise of knowledge have led to the need for new skill sets and lifelong learning; these have subsequently given rise to the necessity to meet greater expectations in higher education institutes. As a result, in the context of Saudi Arabia, the government has introduced a number of policies in order to prepare its citizens to become a skilled workforce and to improve standards and quality in higher education (MoE, 2015).

In addition, with the rise of this new era of development that took place in the early 1970s, Saudi Arabia has significantly shifted its focus towards the higher education framework. For instance, the Ministry of Higher Education was formed during this time and was responsible for drawing up plans to ensure the country's economy was enhanced by a regular inflow of highly skilled manpower. One of the key features of this plan was to set up new higher education institutes, as well as an expansion of the current ones. Thus, over the past fifteen years, there has been visible growth in the number of public universities within Saudi Arabia; the eight public universities in 2000 has had a significant increase to 28 in 2015. Moreover, another primary aim of the Ministry of Higher Education was to set up undergraduate and postgraduate programmes at these institutes across the country (MoE, 2015).

This rise in number of higher educational institutes has also been noticed in terms of the number of students who enrol across different universities and colleges for their bachelor's degree. However, although the number of enrollments has multiplied, due to demographic and social factors, there have been many challenges faced by the government despite the achievements and much progression (Al-Ghonaim, 2005). In light of this, as a result of these challenges, it has created much pressure in terms of being able to cater for the large number of students, as well as affecting the internal and external efficiency of these institutes (The Saudi Eighth Development Plan, 2005-2009). Learning from this perspective has led to institutes devising a number of flexible options for students so that they can benefit from using an online learning environment to increase their knowledge base which, in turn, has also reduced barriers of rigid educational structures. The benefits of this approach to learning have therefore become effective in dealing with current demand (NCEL, 2015).

Furthermore, the demand for higher education will be significant in coming years due to the high rate of growth in the population and more of the younger sector in society enrolling to degree programmes over these years. This has led to other factors that exert pressure on the Saudi higher educational system with regard to qualifying and preparing students for employment. All of this extra pressure and demand has led to raising the capacity of these institutes by the Ministry of Higher Education, which in turn may impair performance and exacerbate student/staff ratios (Al-Harbi, 2008; Al-Sultan, 2005). Thus, to fulfill increasing demand, the concept of online learning has emerged as a new and viable option. This vision is based on the assumption that skills such as ICT proficiency, problem solving, team building, networking and expertise in certain subject areas are essential for students (NCEL, 2015).

In acknowledgement of the vital role that the online learning environment plays within education, the Saudi government has set up the ICT commission to enhance overall

awareness towards the use of ICT in the country. In 2007, the government proposed a plan to transform the country into a digital economy and information society with the aim of enhancing overall productivity and offering ICT services to all sectors in every part of the country. Moreover, the aim was also to establish a robust ICT industry which could act as a stable source of income for the country (Ministry of Economy and Planning, 2015). That said, its primary objective was to enhance knowledge and the creative skills of students by integrating ICT into the domain of education (Al-Sulaimani, 2010; Oyaid, 2009). However, online learning is fast becoming integrated into learning processes on a global scale. In a number of developing countries, online learning is adopted to provide students with the skill-set required to gain entry into a highly competitive job market (Kahiigi, 2013).

While online learning is viewed as a new concept altogether in the field of knowledge transfer, developing countries have also witnessed a number of failed attempts and unutilized initiatives during its adoption (Iahad et al., 2004; Usoro & Abid, 2008). The possible reasons behind these are due to inadequate funding, lack of ICT skills and poor infrastructure (Gunga & Ricketts, 2007; Kahiigi et al., 2009). As a result, such implementation can waste a considerable amount of time without solving the problem at hand. This is a result of attempting to implement ICT initiatives that are not exactly an essential part of organizational reform in such developing countries. In turn, almost no attention is given to the proper usage of ICT and this subsequently raises users' frustration due to failed expectations that arise from such innovations (Kahiigi, 2013).

Moreover, online learning has been considered to be a useful product of ICT in helping students to gain new skill-sets, this is achieved by providing learning opportunities to a much wider range of the population and in improving overall quality in teaching and learning (Jacobson & Kozma, 2012). In light of this, in Saudi Arabia, universities provide a number of online undergraduate courses, such as Arabic Language, Business Administration

and Islamic Studies, which are all exclusively offered online (MoE, 2015). It has been argued that in order to achieve a successful online learning environment, it is vital that users work together on a common goal (Kahiigi, 2013; Howard et al., 2004). In light of increasing globalisation, the ability to collaborate with the help of ICT tools is an essential skill for today's professionals, as more and more organizations are setting up virtual teams that can communicate over an electronic medium. The evolution of technology and knowledge therefore determines the impact it has on education. Moreover, a new approach that makes the learning process more student-centred can also provide a major boost to knowledge construction. Altering the learning environment and making students accountable for their learning helps students to deal with real problems and helps them to construct knowledge. Thus, students can use this experience to gain new knowledge (Chisanu et al., 2012; Jonassen, 1997).

In 2006, the Ministry of Higher Education in Saudi Arabia founded the National Centre for E-learning and Distance Learning (NCEL), with the purpose of encouraging universities and institutes of higher learning to start incorporating online courses in their establishments (NCEL, 2015). Nevertheless, the adoption of online learning is considered to be relatively new within the country (Alanazy, 2011), particularly since the current method of learning focuses on a teacher-centred approach with a one-way delivery of knowledge (i.e., teachers lecture while students listen and take notes). That said, the Ministry of Higher Education has taken a greater interest in utilising technology in the classroom, particularly focusing on online learning to improve the standard and quality of education. This is evident in their eighth plan on education which comprises a greater diversity in educational programmes for higher education, alongside an increased use of ICT as part of innovative learning. The implementation of ICT is therefore expected to create more opportunities for

education via distant learning programmes, subsequently making higher education more accessible for Saudi citizens (NCEL, 2015).

In terms of the Saudi context, there has been a considerable increase in the number of Internet users and subscribers in the country. This has been adopted comprehensively in all levels of schooling, territory institutions and universities. Because of this, there is growing expectation that instructors will incorporate ICT functions in their learning in order to remove obstacles pertaining to resources, gender teaching issues and even physical access to campuses (Oyaid, 2009). The use of the Internet in higher education is increasing in Saudi Arabia due to positive attitudes by students, faculties and administration towards its use in online-based learning (Al-Arfaj, 2001; Albalawi, 2007; Al-Ghonaim, 2005; Alshankity & Alshawi, 2008; Asiri, 2009). Students are subsequently responding positively towards using the online learning environment as a medium to learn, with the major advantage being the opportunity to easily access a vast amount of continually updated information (Al-Qahtani & Higgins, 2013).

In addition, distance learning in higher education has been prevalent in many western countries for many years. This approach to teaching has created a broader scope for learning and education, whereby information and teaching can be conducted and conveyed to learners by means of the Internet. In turn, it enables students to be more flexible in pursuing their education at their own pace and comfort. The global development of network technology has subsequently enabled a greater and more robust access to education than in previous years (Al-Khalifa, 2010). Al-Khalifa (2010, p.1) remarked that Saudi Arabia "has been slower than many nations to move into distance education and that it has a very short history of using printed, electronic, or broadcast means for students who are not physically on site". Despite that in recent years, due to the increasing concern of accommodating for the large number of students in higher education, as well as the desire to improve the skill-set of its citizens, the

Saudi government and Ministry of Education have acknowledged the need to adopt distant learning within their educational development strategy (Al-Khalifa, 2010).

1.5.2.1 *King Abdulaziz University/ Deanship of E-learning and Distance Learning*

King Abdulaziz University (KAU) was founded in 1967 in Jeddah, Saudi Arabia. Its first inaugural year started with 68 male and 30 female students and in subsequent years, the College of Economics and Management, then Arts and Human Science Colleges were established. Currently, the number of students amounts to approximately 90,000, both male and female, making it one of the most distinguished universities in the country and it prides itself on the development in quality and quantity in every field of speciality (e.g., Sea Sciences, Geology, Engineering, Medical Engineering, Meteorology, Aviation and Mineralisation, to name but a few). In order to improve standards in education, KAU not only offers regular courses, but it also established the Deanship of Distance Education in 2004, for the purpose of devising and delivering distant educational courses for students who wished to pursue their bachelor's degree in a number of key areas (i.e., Economics, Administration, Arts and Humanities). They began to provide a large amount and rich educational resources in a range of media, such as different learning management systems and virtual classrooms. This further enabled distance learners to receive the same level of quality as those learners on campus by providing support both synchronous and asynchronous communication between the learners and tutors (KAU, 2015).

KAU has been at the forefront in terms of advocating the use of distance learning in Saudi Arabia. It is the current headquarters for the Saudi Society for Distance Education (SSDE). Thus, in order to support the tutors and learners in enabling distance learning to take place, the university has supplied the relevant adequate technology, including high-tech computers supporting a virtual classroom system, networking and multimedia applications.

The success of this approach has been evident in recent years; for instance, KAU introduced the first programme in distance learning in Saudi Arabia at a masters' level. In addition, sufficient support and training has also been given to staff members who also enrolled on such courses (KAU, 2015).

Moreover, their online courses have an abundance of interactive activities, simulation and animation that can help maximise the learning experience. Learners are expected to engage in active participation during activities and tasks which include course materials, online discussion and group work. These are all available and accessible to learners at any time, making it convenient for them. In turn, the Deanship of Distance Learning at the University is involved in constantly reviewing how to meet and excel in terms of the learners' and tutors' level of satisfaction with the technology applications, services and support facility. These findings are presented in national and international seminars to explore the feedback given by experts in their teaching and learning processes (KAU, 2015).

In 2007-2008, KAU launched its first academic year of online programmes provided by the Faculty of Arts and Humanities and Faculty of Economics and Administration. This comprised lectures being delivered over the Internet and through a Learning Management System (LMS) which ultimately enabled students to interact with their tutors and vice versa. In addition, the Deanship was authorised and accountable for ensuring that staff members were trained and certified, as well as holding responsibility for students who used the LMS within or outside the university. In addition, the LMS adopted by KAU is developed by Blackboard Inc which is a virtual learning environment platform and course management system (Appendix A). Founded in 1997, this system has become increasingly popular and, not only is it used across universities in Saudi Arabia, but it is also regarded as one of the most incorporated educational systems in learning institutes across the globe (El Zawaidy, 2014). The reason for this is because it provides a number of valuable features that enable

learners to communicate and share content effectively through a web-based server. For instance, in terms of the various elements that the LMS provides, it includes various communication functions such as the ability for staff members to post announcements for their students, so those on the course are aware of any important updates when they access the system. Moreover, a chat function allows learners to chat in real-time with their peers who are online during that time, as well as a function that enables them to create discussion threads on specific topics so both learners and staff can reply and comment on them. Another function under communication is a mail server where students and staff can mail one another or all those on the same course (KAU, 2015).

The LMS also incorporates other content features such as the ability to post content and media, for example, relevant articles, videos or other multimedia content to the LMS for learners. In addition, the LMS has a calendar function, which can be used to post important dates like assignment deadlines or test dates. Other functions include posting actual course material, learning modules, assessments and assignments on to the system for all students to access, in particular, those who are distant learners or who only take online classes. Lastly, the LMS has the function to allow staff to post student grades on the system, so students can check their grades online. An integrated LMS that manages the educational process and facilitates the process of interaction between students and faculty members.

1.6 Structure of the thesis

This study of online collaborative learning is organized in six chapters.

Chapter one is an outline of the thesis. It begins by introducing the area of research, followed by the rationale behind this study and focuses on why it is an important area of investigation. From this, the research questions and objectives are defined which provide a foundation for how the study is to be conducted. To provide a background and context to the research, the chapter then presents an overview of Saudi Arabia, its citizens and current

educational system, which also includes the progress that has been made in distance and online learning within universities. The chapter concludes with the structure of the thesis and a summary of the chapter.

Chapter two details the existing literature that is relevant to the online collaborative learning environment and seeks to review studies that have been conducted on the factors that influence its effectiveness within educational contexts. From this, a number of key factors are identified and elaborated upon; these are as follows: technology-related factors, students' characteristics, tutors' role and course characteristics. Once these factors are established, the chapter ends with highlighting the learning theories and technology adoption models that are used in relation to online collaborative learning, and those that are adopted to shape this research.

Chapter three is devoted to outlining the methodology adopted to conduct this research. It provides the rationale behind the methodological approach that was selected in this study, whilst also describing the research sample, the data collection tools that were used, as well as any ethical issues that needed to be considered whilst undertaking this research.

Chapter four presents the results of this study and an analysis of the data.

Chapter five follows on from the previous chapter by providing a discussion on the research findings and explores them in light of the research questions and existing literature.

Chapter six highlights the limitations that were identified during this research, it offers a conclusion and recommendations for future research.

1.7 Summary

This chapter provides an introduction to the impact that ICT has had on modern society and the subsequent potential for the online collaborative learning approach. By identifying and outlining the advantages in adopting such an approach, the chapter then explores the background to this study, which is the context of Saudi Arabia, its citizens and the current

educational system. The following chapter will provide an in-depth review of the existing literature in relation to the use of the online collaborative learning environment and identifies a number of key factors that will ensure it is implemented effective.

2 Chapter Two: Literature Review

2.1 Introduction

The collaborative approach within an online environment has become an established method for facilitating and improving the learning process amongst students. In order to provide learners with appropriate opportunities to interact and work with others, it is important to have access to such a learning environment (Razali et al., 2015). High quality learning environments ensure that learners can take part in collaborative activities alongside their peers, which in turn has been shown to enhance learning outcomes and high order thinking skills (Yuan & Kim, 2014). Moreover, the actual benefits that may occur when creating a collaborative learning environment can include developing skills in self-reflection and critical thinking, as well as the construction of knowledge and meaning through group interaction (Palloff & Pratt, 2005).

This chapter provides a detailed insight into the collaborative learning approach as a paradigm for education technology. It seeks to expound upon the nature and use of an OCL environment, particularly the research themes, where the goal is to encourage collaboration amongst group members for the purpose of achieving an effective and successful learning environment. However, in addition to highlighting the advantageous nature of adopting an OCL setting within learning, Razali et al. (2015) also shed light on certain contentions of its use, whereby there are specific factors that can influence the effective implementation of an OCL environment. These factors will be addressed in detail, identifying the reason for their support for or hindrance towards the effective use of an OCL environment. Lastly, the chapter will highlight a theoretical framework for an OCL setting, focusing on the learning theories and the technology adoption models that have been extracted for the learning processes within the OCL environment to be successful.

2.2 Terms used within this research

Before delving into the existing literature in relation to the factors influencing the effective use of online collaborative learning environment, a number of reoccurring terms that have been used within this research will be highlighted and elaborated upon in more detail.

2.2.1 Online learning

There is not one particular definition for the term 'online learning', as a number of different definitions have been put forth. The Commission of the European Communities (2001, p. 2) defines online learning as "the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaborations". This term has also been defined as

> "The use of Internet to access learning materials; to interact with the content, instructors, and other learners; and to obtain support during the learning process in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience" (Ally, 2008, p.17).

Furthermore, as Rudestam (2010, p.7) states, such online courses have been set up to "meet the need for increased continuing and professional education, increased retention and degree completion, and accessibility for new students outside their catchment areas". Within the scope of online learning, there is much diversity and interchange in the terminology that is used. For instance, online learning can refer to Internet learning, Computer Assisted Learning (CAL), E-learning, Virtual Learning Environment (VLE) or web-based learning. As a result, it can become something of a challenge to provide an accurate definition (Ally, 2008). In light of this, when defining online learning, it is possible that it may relate to varying degrees based upon online instruction. For example, courses delivered online could be entirely online-based or consist of blended learning, which is a combination of online and traditional face-to-face learning that is found in the classroom and could be asynchronous or

synchronous (Palloff & Pratt, 2007). Synchronous learning refers to real-time learning, such as occasions where learners are engaged in tasks at the same time. Within the domain of online learning, this takes place through the means of Computer Mediated Communications (CMC), such as chat rooms or web conferences. In contrast, asynchronous learning refers to occasions where learners are engaged in tasks during separate times, and from the online learning perspective, this could be through text-based mediums such as emails, discussion forums or blogs (Clark & Mayer, 2011).

Moreover, the Online Learning Environment (OLE) is often referred to as a collection of learning and teaching tools that are designed to develop the learning experience for the students, which is achieved by incorporating ICT and online facilities into the learning curriculum (Boling et al., 2012; Burton & Goldsmith, 2002). A number of commercial software packages have been developed, such as Lotus LearningSpace, WebCT, COSE and the popular Blackboard. The advantage of using online learning is that it allows learners to participate in courses without the need to be physically present in a specific location (Burton & Goldsmith, 2002). This means, by communication via the Internet, learners are able to interact with their peers and tutor and have direct access to the course content. Consequently, more educational establishments are taking into consideration the benefits of online courses and are increasingly implementing them, specifically for those who may not be able to attend a traditional classroom setting (Rockinson-Szapkiw et al., 2010).

When adopted in education, the primary components of the OLE comprise curriculum mapping (where the curriculum is broken into various sections for assessment and assignment), electronic communication (i.e. discussion boards, emails and chat facilities), support for tutors and learners, as well as learner tracking. As the tutor has additional user privileges over the learners, they have the capability to track their learners' performance and create/modify course content (Alowayr & Badii, 2014). Nevertheless, while there are a

number of key advantages to online learning, researchers have identified certain barriers that learners face when using this environment. Muilenburg and Berge (2005) have outlined several of these, such as issues in administration, limited access to ICT resources and technical difficulties, as well as personal barriers such as motivation, time constraints, necessary skills to use ICT and the ability for social interaction. Furthermore, other barriers that have been identified include limited technical support, learners being unfamiliar with their roles and responsibilities in using ICT, dependency upon technology, delays in tutor feedback, and low levels of performance and satisfaction from the learners (Navarro, 2000; Simonson et al., 2009).

2.2.2 Collaborative learning

Collaborative learning is a term used to describe situations where two or more individuals learn together (Dillenbourg, 1999). Gray (1989, p.5) defines collaboration as "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible." Papert (1980) believes that education adheres to a constructivist approach, which means that learning does not just relate to how knowledge is perceived, but also addresses how to understand this knowledge. Consequently, when contextualising this approach within the education domain, Lê (2002, p.67) states that collaborative learning is "an instructional method in which students at various performance levels work together in small groups toward a common goal". This approach to learning is common: as Gerlach (1994) asserts, learning itself is an inherently social activity because it occurs as a result of conversations and interactions amongst group members. He argues, "collaborative learning is based on the idea that learning is a naturally social act in which the participants talk among themselves" (Gerlach, 1994, p.12).

The premise for this approach is that the most effective way for individuals to learn is when there is an opportunity to learn from others in a collaborative manner ((Dillenbourg, 1999). Moreover, collaborative learning is based upon the assumption that knowledge is created when it is shared amongst individuals. Thus, within the realms of teaching and pedagogy, Leidner and Jarvenpaa (1995) assert that the more information people share within a group, the more likely is it that learning will take place. In contrast to individual learning, those that are engaged in collaborative learning are able to take advantage of the skills and resources of other members within their group. This includes an encouragement to share information, monitor each other's work and evaluate and provide feedback to one another (Chiu, 2008). More specifically, collaborative learning is built on a fundamental principle that knowledge can be generated as a result of continuous interaction from members within the group and by sharing their experiences. Thus, this approach is founded upon the diversity of knowledge and experiences, which in turn can significantly impact on the learning outcomes in a positive manner. In turn, it ensures all the participants are engaged in a common task and everyone is dependable and accountable to one another (Mitnik et al., 2009).

In addition, as this approach is an offshoot of Vygotsky's (1978) sociocultural and social constructivism theory, the primary goal of collaborative learning seeks to construct knowledge by continuous interactions, active learning and by working as a team. In doing so, it is anticipated that those with previous knowledge on a particular topic or issue will be able to contribute effectively to the discussion, as well as assisting others to participate, given that there are suitable incentives and conditions. It is also important to note that, due to the nature of collaborative learning, it is critical that all the group members engage and participate in the learning process (Stahl et al., 2006).

Although collaborative learning is an approach that facilitates and involves individual learning, clarification is needed to determine whether it is a group process or an accumulation of individual change (Stahl et al., 2006). Stahl and colleagues assert, "collaborative learning involves individual learning, but is not reducible to it" (Stahl et al., 2006, p.3), while Dillenbourg (1999) explains collaborative learning does comprise individual activities and movements (i.e. reading, predicting) that will foster and initiate cognitive processes within such individuals (i.e. deduction/induction). However, this creates and initiates further cognitive processes specifically as a result of group interactions (i.e. explanation, internalisation and knowledge elicitation). What this suggests is, through the interactive nature of collaborative learning, certain learning mechanisms are initiated and implemented accordingly, which would not have occurred if the learning was undertaken on an individual basis. Essentially, this means continuous interaction between individual produces cognitive and mental processes that are high and favourable for learning. These mechanisms and activities are all those that the collaborative learning domain encourages and is based upon (Dillenbourg, 1999).

Ultimately, there are a number of studies that affirm the benefits of implementing collaborative learning, including the ability to think critically, share understanding, gain a deeper level of learning and ensure a long term retention of teaching materials (e.g. Johnson & Johnson, 1999; Garrison et al., 2001). Moreover, opportunities to build social relationships and develop communicational or social skills are presented to individuals, as well as the opportunity to develop positive attitudes towards other group members, group cohesion and towards the learning materials (Johnson & Johnson, 1999). The necessity of such effects is critical when collaborative learning is implemented in situations where tasks are ill structured, complex and embedded in an authentic context. This is because the aforementioned conditions allow competencies to be developed (Keen, 1992) and increase

the effectiveness for knowledge to be constructed within a social environment (Jonassen, 1994). In terms of competencies, these are regarded as abilities that allow individuals to acknowledge and explain any new issues that arise within their area of study, as well as identify how to resolve such issues (Kirschner et al., 1997). Despite the majority of empirical studies indicating considerable advantages of using collaborative learning instead of individual learning, there are a number of studies that have reported no clear differences or, more alarmingly, negative effects as a result of its use (Johnson & Johnson, 1999).

2.2.3 Online collaborative learning

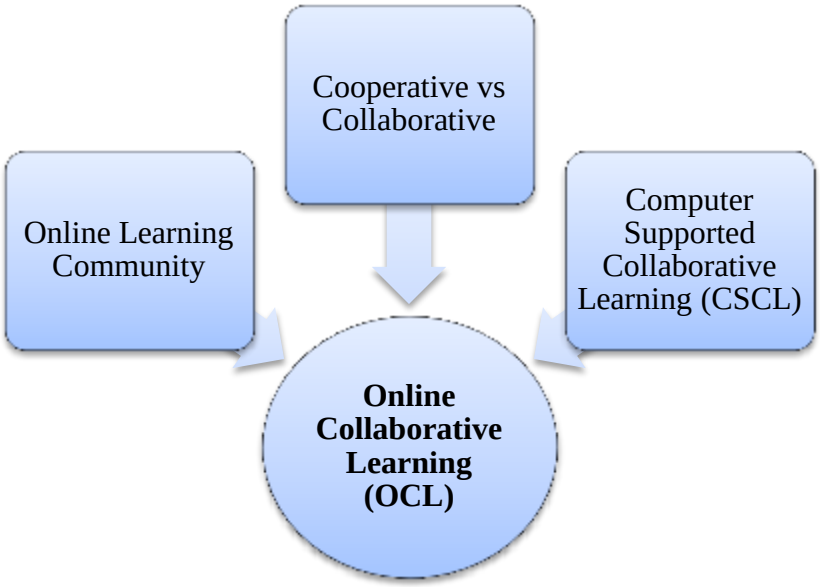
There has been an evident shift in the strategy of higher educational establishments, which have focused on the increased adoption and incorporation of a collaborative approach within online environments. Communication settings such as CMC and videoconferencing applications have been regarded as a means of providing significant improvement to learners' skills and knowledge. Thus, as stated by Stahl et al. (2006, p. 2), the concept of implementing the OCL environment can provide learners with "creative activities of intellectual exploration and social interaction", which highlights the evident need to integrate technology in education. While researchers have highlighted the advantages of adopting online education, this is not without its criticisms, particularly in questioning its overall quality, effectiveness and value (Bolliger, Inan & Wasilik, 2014).

Furthermore, an online learning environment is considered to be interactive and collaborative (Bonk, 2009; Palloff & Pratt, 2007). The reason for this is that the concept of learning itself is an active process, where interaction amongst the learners and tutors is necessary for it to be effective and a success (Palloff & Pratt, 2007). Thus, as well as enabling learners to access course content from any given location, online collaborative learning also centres on interaction and communication. This means the success of online collaborative learning is to develop strong online learning communities: as Palloff and Pratt

(2007, p.40) explain, “without the support and participation of a learning community, there is no online course”.

As highlighted in Figure 2.1, within this area of research a number of key terms are frequently associated with online collaborative learning. These terms will be clarified further in the following section.

Figure 2.1 Online learning environment



2.2.3.1 *Online learning community*

A key term that is often linked with online collaborative learning is community. In general, referring to a community in this context refers to a group of participants that interact with one another within an online environment. Individuals are a necessary part of the community: as Brown (2001, p.31) states, “the community did not happen unless the participants wanted it to happen”.

More specifically, within this, there are three types of community that have been distinguished: 1) The Community of Inquiry, 2) The Community of Practice and 3) The

Online Learning Community. In reference to the Community of Practice (CoP), Wenger et al., (2002, p. 4) define it as "groups of people who share a concern, a set of problems or a passion about a topic and who deepen their knowledge and expertise in this area by interacting on an ongoing basis". In relation to the Learning Community (LC), McConnell (2006, p.19) defines this as "a cohesive community that embodies a culture of learning…. A key feature of the idea is that responsibility for learning is 'shared' among community members" (p. 19). While the Online Learning Community is similar to the LC, the primary difference is that it takes place using the online environment as the medium, in order to develop learning and share values (McConnell, 2006).

The Community of Inquiry (CoI) is a community of learners that assist in levels of learning, such as different viewpoints, high-order learning, critical discourse and reflection (Garrison, 2011). This is based on three components - social, teaching and cognitive presence as learners are able to take responsibility over their own learning. When collaborating, there are three important components to consider: participation, interaction and synthesis (Ingram & Hathron, 2004). The first element, participation, is considered to be the main factor during the collaborative process, where each group member must be active during tasks, activities and the learning process in general. The second element, interaction, necessitates that group members respond directly to one another, specifically during tasks. Ingram and Hathron (2004) state, "the interaction in a group provides some insight into how individuals learn through discussion as they share information and test ideas" (p. 220). Finally, synthesis is the third aspect of the collaboration process and refers to the final product of an activity or task, which is formed from the input and synthesis of ideas from all group members (Ingram & Hathron, 2004).

Thus, a collaborative approach within an online setting is regarded as a strategy that can support individuals in their learning experience through various levels of interaction

(Johnson & Johnson, 2004; Menchaca et al., 2002). To collaborate effectively, learners should be given sufficient authority and freedom to actively engage with others during a task (Tu, 2004). To achieve this, the tutor should relinquish their authority to the learners during collaborative tasks, and adopt a role of facilitator instead, in order to guide the learners and provide them with the correct foundation and structure.

In addition, the OCL environment offers students a strong opportunity to showcase their ideas, and can help them develop necessary skills such as persuasion, negotiations, expressing ideas, team working and taking ownership (Jaques & Salmon, 2007). To be regarded as an online learner, the individual should have access to a robust learning environment that enables them to interact and connect with others. This means learning environments of high quality and standard should offer good prospects to the students in enabling them to take part in collaborative and engaging activities with other learners. Such circumstances result in enhanced learning outcomes and an increase in higher level thinking skills. Moreover, some of the well-established benefits arising from collaborative learning include creation of knowledge in a group setting, enhancement of critical thinking skills and self-reflection (Palloff & Pratt, 2005).

Collaboration gives rise to a collective increase in knowledge and the enhancement of social knowledge (Garrison et al., 1999). As a part of collaboration, the participants gain from each other's strengths and arrive at a solution which could have been impossible to achieve alone. Nevertheless, although online learning has proven to be a highly successful medium of learning, in many cases students and teachers may not have the appropriate conditions for the implementation of an OCL environment, since it requires the responsibility of learning to be held by the student in a self-learning style. OCL is essentially a student-centred approach, with the teacher providing high autonomy to the collaborative students (Tseng et al., 2009). In light of this, there are vast differences in the ways students may view their OCL

experience during learning (Muilenburg & Berge, 2005). Bolliger and Martindale (2004) have identified several key factors that are central to influencing online student experiences, which are related to the instructor and technology.

Collaborative learning within online groups is becoming an increasingly popular method of teaching for online courses, as the advantage for collaboration within learning is deeply rooted and evidenced in a number of socially oriented learning theories; more specifically, Social Constructivism (Vygotsky, 1978) and Connectivism (Siemens, 2005). In order to promote the social construction of knowledge, educationalists and faculty members alike are articulating the adoption of collaborative learning in education, and in fostering learning communities (Fung, 2004). According to Kanuka (2011), this can be done in a number of different ways, such as engaging on a task, project or assignment, using multimedia, interacting with cognitive support software, reading a text, watching a video or researching information. Although collaborative learning could be implemented to ensure higher levels of interaction amongst students, specifically in improving the quality of the learner experience and in the efficiency of delivery, these benefits of collaborative learning within the online environment cannot be maximized unless used by the learners. Social interaction within the online community is critical in ensuring such communities are successful (Garrison et al. 1999). This means the learners must feel they are a part of the group, where there is a sense of belonging and trust, so that the collaboration not only occurs, but it is valued. One must therefore note that social presence should not be seen as a catalyst for collaboration, but rather, as a significant factor that influences the attitudes of the learner when they need to collaborate on a specific task (Weinel et al., 2011).

2.2.3.2 *Computer Supported Collaborative Learning (CSCL)*

Computer Supported Collaborative Learning (CSCL) emerged as a new paradigm of educational technology during the early 1990s (Koschmann et al., 1996) and was inspired by

research in Computer-Supported Cooperative Work (CSCW). During this time, the implementation of learning technology took on a different perspective; consequently, the basis for this approach was derived from Vygotsky's (1978) sociocultural and social constructivism learning theory, which asserts that knowledge is generated and constructed by means of social interaction and collaboration. CSCL is therefore used as a support mechanism for social interaction and collaboration to occur, in conjunction with an individual's self-paced learning. Moreover, Dillenbourg et al. (2009) state that since 2005, CSCL has matured and is no longer seen as a distinct pedagogy, but has integrated into education as a whole and become a significant element of this environment.

Furthermore, CSCL is an approach that enables learning to occur through social interaction and by the means of a computer and Internet access (Stahl et al., 2006). This method of learning is regarded as an approach where knowledge is created through the sharing and construction of ideas and experiences of individuals, with technology being their primary mode of communication (Stahl et al., 2006). Thus, due to the dynamic use of technology and the advent of the Internet, CSCL can be implemented in either a classroom learning environment or an online environment, as well as occurring synchronously or asynchronously. Additionally, CSCL focuses on understanding how individuals learn with the aid of computers (Stahl et al. 2006), which is done through the use of ICT to foster group activities, such as knowledge sharing and problem solving tasks (Dewiyaniti et al., 2007; Prinsen et al., 2007).

In addition, having an appropriate LMS that is used to connect individuals online is one of the most influential components within collaborative learning, as it enables people to share their knowledge and experiences with one another (Cavus, 2013). The common features of these systems are how effectively they can maximise the interaction amongst group members by opening different channels for communication, such as video, audio or

text-based applications. This, coupled with the ability to share storage space and information, gives the users the ability to potentially exchange and access information from any location (Majchrzak et al. 2000). Thus, what is implied within the literature is that the implementation of CSCL provides valuable opportunities for group work and the sharing of knowledge (Lehtinen et al., 1999; Stahl et al., 2006).

An array of studies have established how learning can be constructed as a result of continuous social collaborations of individuals within an LMS (Cohen & Prusak, 2001; Nonaka & Konno, 1998), more specifically because learning itself is often regarded as a collective and social activity (Ellis & Goodyear, 2013). However, it is important to note that the primary focus of CSCL is how collaboration amongst group members through the support of technology can significantly increase the opportunities and ability for individuals to interact and work in groups, as well as how this approach fosters an environment where knowledge and expertise can be shared among group members (Lipponen, 2002).

Within the present-day context, collaboration is synonymous with good learning and the use of suitable educational technology. In this sense, any web-based application can be referred to as 'collaborative platform' (Piki, 2011). However, this is quite a vague approach for defining collaborative technology, due to the fact that there has been no established methodology in place to categorize which application is regarded as collaborative or because any application can potentially and hypothetically be used to support collaboration (Piki, 2011).

As a result, it may be necessary to make the distinction between collaborative technology and the collaborative use of technology (Lipponen & Lallimo, 2004; Piki, 2011). For instance, collaborative technology can refer to the collaboration that is facilitated through the use of computer networks; a common example of this is the Internet (Piki, 2011). However, as Roschelle and Pea (1999) explain, the majority of the tools and forums found on

the Internet are not necessarily suitable for classroom usage, as they are not designed specifically for the purpose of learning or for collaboration. Nevertheless, by incorporating and implementing specific pedagogical practices relating to collaborative learning, collaborative technology like the Internet has the potential to enable such applications and tools to be used for this very purpose (Piki, 2011).

Moreover, Kirschner and Erkens (2013) propose that one specific and effective application for CSCL is the use of network learning environments; these are designed for the purpose of education and to build knowledge through collaborative means. For instance, a common feature of this environment is to support the group members' cognitive activities through the use of sociocognitive scaffolding (Pea et al., 1999). This means providing a number of ways for discussion to be structured, which in turn generates collaborative representations. Pea et al. (1999, p. 33) expound upon this, stating, "These tools all scaffold learning by pre-structuring the kinds of contributions learners can make, supporting meaningful relationships among those contributions, and guiding students' browsing on the basis of socio-cognitive principle". Although collaborative technology can be used specifically for the purpose of collaboration and learning, it is important to note that this is not always the case. As highlighted, this technology can also be used for other purposes such as simply providing information for individuals to download or access themselves, without the integration of any collaborative components (Piki, 2011). Thus, to solely rely upon technology will not resolve all the challenges that are associated with collaboration and learning, or even in a particular setting such as an educational institute. This does raise serious questions over how the collaborative approach within an online environment will be implemented effectively.

2.2.3.3 *Distinction between cooperative and collaborative learning*

Researchers who attempt to make the distinction between collaborative and cooperative learning have proposed diverse criteria in how students work together. It is therefore important to analyse the terms *cooperative* and *collaborative*, in order to evaluate whether any distinction is to be made. According to McConnell (2000, p.8), cooperative learning comprises "working together on some task or issue in a way that promotes individual learning through processes of collaboration in groups". However, a number of unique definitions and interpretations of collaborative learning have come to the fore. In relation to this, various researchers have used collaborative and cooperative learning interchangeably, citing the fact that both approaches focus on groups working together in achieving the desired learning goals (Bruffee, 1995). Nevertheless, even though one could classify them both as group-based learning approaches, there are other researchers who make a clear distinction between the two terms.

Furthermore, in the context of learning, cooperation refers to a process in which the whole task is divided for each of the group members to complete independently, and upon completion of these sub-tasks, the work is joined to form the final task (Dillenbourg & Schneider, 1995). During this process, it is noted that interaction and discussion amongst the group members is limited and somewhat lacking. Dillenbourg and Schneider (1995, p.8) highlight this, stating cooperative learning is "a protocol in which the task is in advance split into subtasks that the partners solve independently"; they go on to make the distinction between cooperative and collaboration, where they refer to collaboration as situations "in which two or more subjects build synchronously and interactively a joint solution to some problem" (ibid, p.8). Thus, this distinction emphasises the quality and extent of the interactions that take place amongst group members within such environments.

In addition, what is often the case in tasks that are deemed cooperative is that individuals within the group come to an agreement over the various components of the task, and then allocate each component to the group members, who are subsequently responsible for completing their own part independently. Once each member has completed their component, they are all collated together as a finished product. Conversely, when analysing the components that are found in collaborative learning, it is evident that discussion and group work during a task are key aspects of this approach. Verdejo (1996, p.79) verifies this by stating collaborative learning is based on a "conversation or dialogue paradigm", which is because of the cognitive benefits that have been attributed and highlighted during collaboration and verbal interactions (Pressley & McCormick, 1995). This means that, although both terms do emphasise a shared approach to tasks, Henri and Rigault (1996) believe the autonomy of the group members is a distinguishing feature of cooperative and collaborative learning. In contrast, when referring to collaboration, the main emphasis is placed on how the group works together, through coordinated interaction and discussion, in order to construct the final task (Roschelle & Teasley, 1995; Stahl et al., 2006). It is therefore evident that these terms primarily differ in the level of interdependence and engagement that occurs amongst group members during a task or working process.

Furthermore, due to the mutual interaction throughout a given task, the final product within collaborative learning is an accurate representation of joint work that surpasses the accumulation of individual efforts of sub-tasks that are found in cooperative learning (Dillenbourg, 1999; Ingram & Hathorn, 2004). As this is quite a general overview of how each term is implemented, there are situations where the lines between cooperation and collaboration are somewhat blurred. Dillenbourg et al. (1996) acknowledge this, stating that during the collaborative process, there are instances where work within a task can be spontaneously divided amongst individuals as opposed to joint efforts.

Panitz (1999) provides another perspective on how these terms are distinct, based on the extent of control that is witnessed during a learning task or project. That is, during collaborative learning, the students assume ownership and accept full responsibility for their actions, whereas in cooperative learning, it is the teacher who preserves control by structuring the group members' interaction, as well as being the one to allocate the specific sub-tasks and roles when completing the final product. Within collaborative learning, the method is predominantly instructional. This means the tasks that are set are often ill-structured, and therefore the members within a group are given more independence during the task, which generates a greater degree of interaction and knowledge sharing. Conversely, the approach taken within cooperative learning is to provide learners with well-defined tasks. This means the teachers/tutors maintain control over the learners, as they are responsible for dividing the task up into individual components. As a result, the level of interaction and knowledge sharing during this working process is relatively lower.

Bruffee (1999) further states that the origins for the two terms are different, specifically in relation to the knowledge, learning motivation and individual background of the group members. For instance, while collaborative learning is generally applied within the adult sector or in higher education, where the learners are more motivated and have a greater knowledge of the subject matter, cooperative learning is more suited and implemented in educational contexts for younger learners who possess less knowledge, lack self-motivation or the skills to work independently for the purposes of learning.

Roschelle and Teasley (1995, p.70) also make the distinction between these terms, where they define cooperative work as

> accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem solving..., whereas collaboration involves the... mutual engagement of participants in a coordinated effort to solve the problem together.

Although Dillenbourg et al. (1996, p.190/2) make a distinction between cooperation and collaboration, they elaborate on this, stating these two:

> do not differ in terms of whether or not the task is distributed, but by virtue of the way in which it is divided: in cooperation, the task is split (hierarchically) into independent subtasks; in collaboration, cognitive processes may be (heterarchically) divided into intertwined layers.

Moreover, even though coordination is necessary during both approaches as a means of ensuring the work is completed, Roschelle and Teasley (1995) explain that this is only needed in cooperative work when the final product is ready to be assembled from the individual subtasks, whilst collaboration work focuses on activity by all group members concurrently and "is the result of a continued attempt to construct and maintain a shared conception of a problem" (ibid, p.70).

2.3 Factors influencing the effective use of the OCL environment

As the research focuses on the effective use of the OCL environment, it is first important to have a clear understanding of the term 'effectiveness'. This is considered to be a broad concept and has a number of varying definitions. In light of this, the following sections will elaborate upon this term and subsequently provide a detailed insight into the various factors influencing the OCL environment.

2.3.1 Effectiveness

Effectiveness is defined as the achievement of certain goals and objectives (Oxford Dictionary, 2013). In the context of an online learning environment, Reeves and Hedberg (2003) explain that effectiveness is used to evaluate whether an interactive learning environment has achieved the objectives that have been defined during its implementation stage.

2.3.2 Factors influencing (encourage or hindrances) the effective use of the OCL

OCL environments are subject to various factors that can influence how they are implemented and their overall effectiveness; previous research in this area of study has subsequently identified a range of factors that have affected academic establishments when considering the use of the OCL environment (O'Neill et al., 2011; Razali et al., 2015). This research has extracted such factors from theoretical and practical studies, which have been classified into four key areas that will be discussed thoroughly.

2.3.2.1 *Technology related factors*

Over the past decades, the quality of technology that is available for the purpose of learning has improved dramatically (Pituch & Lee, 2006). This development has the ability to greatly improve the manner in which students interact with knowledge and how they can negotiate ideas and meanings (Alavi & Leidner, 2001; Laurillard, 2013). Thus, by creating an appropriate platform for online learning, there is a greater scope to improve and facilitate interaction and collaboration amongst group members (Razali et al., 2015).

Furthermore, O'Neill et al. (2011) refer to one of these key factors as accessibility to technology and, as a result, the use of such technology is becoming prevalent within education in order to aid learners to develop their interactive skills with one another (Ben-Zvi, 2007). However, it should be noted that when designing the LMS user interface, one should consider the user by ensuring the system is easy to use (Ghoniemy et al., 2010). Moreover, it is also noted that the overall design and quality of the OCL environment plays a role in the effectiveness and performance of how an online course is taught; this further relates to the ease of use when learners interact with the LMS (Chang & Tung, 2008; Shee & Wang, 2008; Lee & Lee, 2008). Zhu et al. (2009) elaborate upon this, stating that it is how the learner perceives the environment and whether they see it as being easy to use.

The vital impact that technology has upon stakeholders is that they raise their attention towards the implementation and use of technology (Al-Alwani, 2005; Curbelo-Ruiz, 2002; Zhao, et al., 2002). As a result, within any online environment, the facilities that are provided by technology are vital in influencing users' decisions to utilise and engage with the LMS. This could be in terms of providing students with easier access to the Internet or relevant ICT equipment that students require both hardware and software. It can also refer to a logistical aspect, such as providing specific equipment that is used to convey instructions (Al-Saif, 2005). It was also noted that certain factors, namely technical and administrative support, were primary barriers in encouraging stakeholders to use the ICT equipment, which Rogers (2000, p.463) defined as "limited access to useful, relevant, and appropriate hardware and software". This illustrates a need to identify, reduce or remove any organisational, social or technological barriers that stakeholders may encounter, so that the LMS can be used successfully and to its full capability.

In addition, as the OCL environment is reliant upon technology, it is apparent that this becomes the vital instrument that can either impede or promote the overall participation and learning experience of the user (Lockwood, 2001; Beldarrain, 2006). Within this area of study, access to technology and a reliable platform have been outlined as key contributing factors (Bernard & Rubalcava, 2000; Koo, 2008; Porcaro, 2011, O'Neill et al., 2011). Access to computers has been regarded by many academics to be among the most vital factors that can influence the effectiveness of online learning environments (Koo, 2008; Porcaro, 2011; Ginns & Ellis, 2007; Peeraer & Van Petegem, 2010). Guo and D'Ambra (2009) and McCreadiea and Rice (1999) also highlight that access to technology can have a great impact upon the learners' use and attitude towards it, while Guo et al. (2008) further expound upon the importance of ease, which determines whether or not learners would use this form of technology. Moreover, Menchaca and Bekele (2008) draw attention to the valuable

contributions that the technological features of online environments have made to collaborative learning, by making the learning experience flexible and easy to use. That said, for learners to be engaged appropriately and for efficiency in ensuring learning takes place, the OCL environment still faces obstacles of merging technology and education: specifically, the availability of the tools that are necessary within this environment and those that the learners are accustomed to using (O'Neill et al., 2011; Stahl et al., 2006).

Moreover, online environments enable learners to increase their levels of interactions with one another. McIntyre and Wolff (1998, p. 257) explain "one of the powers of interactivity in a Web environment is the capability to engage by providing rapid, compelling interaction and feedback to students". This may be maximised through the diversity of online tools that such an environment possesses. For instance, a study conducted by Rockinson-Szapkiw et al. (2010) showed that students using both forms of communication forums (i.e. synchronous and asynchronous) possessed a greater level of interaction, as opposed to those who only used asynchronous communication. This shows that a key aspect pertaining to the richness of using technology in a collaborative approach is in having various online collaborative tools that provide opportunities to increase interactivity. Menchaca and Bekele (2008, p.247) explain that,

> students repeatedly mentioned the importance of collaborative discussion and reflection supported by multiple tools. Through collaborative tools, students were more likely to comment on each other's work, providing critical feedback and suggestions for modification.

Thus, interactive elements within the OCL environment makes it a viable and ideal solution in improving the learning process (Lehtinen et al., 1999; Roberts & McInnerney, 2007). This means the primary objective in adopting the OCL environment centres around the implementation of technology to enable collaborative learning amongst peer groups, individuals and teachers, which is subsequently used to facilitate the distribution of work activities and the sharing of knowledge (Lipponen, 2002).

According to Ragoonaden and Bordeleau (2000), students become frustrated as a result of technical difficulties, which subsequently impedes communication and collaboration with their peers. To alleviate this, technical proficiency becomes a prerequisite to reduce any student anxiety and to improve their progression. Hughes et al. (2002) assert that it is important for tutors to ensure students are confident in handling technology, which includes having a working knowledge of common and relevant technological components. If this is not the case, training or support should be made available when required.

It is therefore implied that if the use of technology within a learning environment is to be successful and effective in ensuring learning takes place, two conditions should be met: 1) the technology should be suited for the underlying model of learning, and 2) the pedagogical model is appropriate for the learning situation (Leidner & Jarvenpaa, 1995). To support the OCL environment, it is therefore imperative that academic institutes ensure the infrastructure and subsequent support system that they provide is robust, reliable and suitable to meet the needs of the learner, which also includes access to and maintenance of technology (Lipponen, 1999; Ngai et al., 2007). Hart (2012) emphasises the importance of technical support, in that it can determine whether or not ICT will be accepted and used by tutors and learners within the teaching/learning environment.

With regards to the context of this study for the higher educational system in Saudi Arabia, researchers have stated that the application of technology within such a context is relatively limited (Al-Fulih, 2002; Al-Wehaibi et al., 2008). Alaugab (2007) identifies this limitation to be related to the lack of reliable infrastructure and technical support, intermittent access to the Internet and competency levels in using technology and the Internet, as well as restricted financial support to train teachers in using the learning environment. In light of this, plans have been made by the Ministry of Education to provide relevant and reliable technology for online teaching; however, these are still in the early phases (Alanazy, 2011).

Al-Ismaiel (2013) proposed the reason for this could be due to the teachers' reluctance in adopting other approaches, and more specifically, their insistence on adhering to the teacher-centred approach that they are familiar with.

To summarise, as shown in Table 2.1, the themes of technological accessibility, ease of use and navigation of the LMS interface, adequate Internet speed, the availability of various interactive tools and having a technical support system in place have all been identified within this section as having a clear influence over the effective implementation to provide an appropriate platform for collaborative learning within an online environment. These have been discussed in detail and regardless of their context, if these technological factors are not addressed appropriately, can impede how the OCL environment is implemented.

Table 2.1 Technology related factors

References	***Themes***
O'Neill et al. (2011)	Accessibility to the technology
Ghoniemy & Fahmy (2010	LMS interface/easy to use
Alaugab (2007)	Adequate internet speed
Menchaca & Bekele (2008)	Existing OCL tools
Hart (2012)	Adequate and immediate technical support

2.3.2.2 *Students' characteristics*

A number of student characteristics have been highlighted within literature as having the potential to influence their use of the online collaborative learning environment, including their appreciation for the collaborative approach and their confidence in using the online environment (Dabbagh, 2007; Usart et al., 2011). Attitudes towards ICT and the experiences that learners have had in collaboration work using technology may therefore either become a barrier or facilitator for them to subsequently participate within the collaborative learning setting (Lammintakanen & Rissanen, 2005; Dabbagh, 2007; van Seters et al., 2012).

Furthermore, Roberts and McInnerney (2007) have classified a number of common problems that are experienced by students within an online learning environment. This includes their hostility towards group work and group interactions, group selections and formation; lack of necessary skills for effective group work; antipathy towards free-riders; potential inequalities in the ability and knowledge of each group member (Tsai et al., 2011); frustrations towards members who withdraw from the group; and the assessment process of individuals within a group. In light of this, a number of studies in the field of the OCL environment have demonstrated the differences that can occur in the type and level of participation as a result of the learners' characteristics (e.g., Barrett & Lally, 1999; Lipponen, 1999; Robertson, Hewitt & Scardamalia, 2003).

In order to improve collaborative learning within an online setting, learners should understand and be aware of its advantages, as well as acknowledging how this approach can increase their success and impact upon their experience. As McWhah et al. (2003) further explain, students may regard collaborative learning as being a valuable asset to their learning experience if they feel they can use it to contribute towards a group project, that their final result will reflect their contributions, and that it is valued. Conversely, De Hei et al. (2015)

highlight that if students and tutors alike do not regard collaborative learning to be of any value then it is unlikely to be implemented. Dabbagh (2007) further explains that, whilst some learners have a natural inclination to collaborate or engage in peer interaction, there are others who need to be convinced in order to comprehend the advantages, usefulness and educational values of such learning environments (De Hei et al., 2015). Dabbagh (2007, p. 221) states learners should have "a basic understanding and appreciation of collaborative learning and develop competencies in related skills".

It is therefore vital that learners show a willingness to collaborate with their group members from the outset (Palloff & Pratt, 2007; Koo, 2008; Xiong & So, 2010), as this environment compels students to work together with a goal of creating and establishing a deeper meaning of any given activity. This means learners are required to put forth their own perspectives on a matter and to negotiate their opinions and views. However, the OCL environment itself may interfere with the students' willingness to engage. For instance, computer-based learning may create frustration or negative attributions towards one's own competency and ability (Dillenbourg et al., 2009).

Furthermore, the students' experience in using the online learning environment is regarded as a vital factor in ensuring its effective use (Menchaca & Bekele, 2008). This means that learners' levels of computer literacy should be at a certain level (Dutton et al., 2002; Halsne & Gratta, 2002; Weaver, 2005). Wojciechowski and Palmer (2005, p.2) concur, stating, "within online classes, students must not only learn the course material but also the technology skills needed to participate". According to research by Hostetter and Busch (2006), students who participated in more online courses had a positive perception towards the environment. Therefore, users who have experience with the procedures of online courses are able to progress or maintain levels of sustained participation during discussions. Conversely, Brown (2001) argues that novice users may feel reluctant to use an unfamiliar

system, and therefore have a greater expectation with respect to input and support from the tutor. He further suggests that experienced users have a greater tendency to be discouraged in using online systems if these expectations are not met. This is exhibited in Brown's (ibid) study, which showed that users who attended more courses progressed in their experience of using online environments and had a positive correlation in developing their interaction and overall satisfaction in learning.

In addition, by identifying the characteristics of students who were successful in an online course, one may use this to help tutors to encourage certain students from using the OCL environment (Wojciechowski & Palmer, 2005). As previously mentioned, there may be a striking contrast in the learners' technical proficiency in online systems, which may also influence how they interact during collaboration activities (Salas et al., 2002). There is research to suggest that the preferences approach of learners, which are the habitual patterns and methods that are assumed in order to process and acquire information, can influence education (Pashler et al., 2008). Advocates of individual learning styles have recommended that tutors should assess their learners and adapt their lessons accordingly (ibid). Whilst the precise definitions and applicability for the concept of 'learning styles' may be questionable (ibid), in relation to OCL environments, Sun et al. (2008) state it is essential for technology to reflect various styles or learning approaches, as opposed to assuming every student adheres specifically to one particular method of learning. Therefore, it is crucial to design such environments that consider and accommodate various approaches to learning in a variety of ways. According to literature, the overall rationale and design of online courses are regarded as essential for learning, particularly in encouraging learners to interact and participate with one another (Brandon & Hollingshead, 1999; English & Yazdani, 1999; Tolmie & Boyle, 2000; Kennedy & Duffy, 2004). It should also be noted that in terms of learning preferences from the students, Ragoonaden and Bordeleau (2000) found that those who preferred to work

autonomously and independently showed some antipathy towards group work and collaboration.

Colbeck et al. (2000) further suggest that the level of previous experience possessed by the students in collaborative learning environments can also affect how the learner interacts during online discussions. They found that this had a positive influence over the students' planning and communication skills, and in certain cases, such students were more likely to lead the group (ibid). Moreover, in terms of adopting methods of communication, King and Xia (1997) found that previous experience in ICT had an effect on the students' opinion and use of new media for learning, while Guo et al. (2008) found that those with previous experience using IM (Instant Messaging) preferred this form of communication. Guo et al. (2008) concluded that although these effects are generally positive for the learner, adopting an online learning environment can be dependent not only upon the learner but also upon the type of software that is used, how much control the learners have within these environments, or other individual characteristics that can also influence the application of information technology (Gribbins et al., 2007).

With regards to the learner's prior knowledge, researchers propose this is the dominant factor that determines how well students contribute within online environments (Johnson & Aragon, 2003; Schroeder et al., 2010). In the research conducted by Wilson and Stacey (2004), learners who were regarded as high achievers and with high aptitude exhibited the same characteristics and personalities in both the online and in-person interactions. In addition to this, other factors that contributed towards the students' performances during online and in-person collaboration were their preferred learning strategy and their personality types. Other researchers such as Wallace (2004) found that a shortcoming of previous knowledge led to a lack of student engagement and in reaching complex ideas. Additionally, factors that are personal to the learners can influence the students' engagement and

interaction, such as collaborative skills, their previous experience in using an OCL setting, and contextual cues including cultural compatibility or instructional methods.

Studies further highlight that the online learner should possess a number of key competencies when using an OCL environment, including communication and interpersonal skills as well as a certain level of expertise and experience in ICT when navigating within such an environment (Dabbagh & Bannan-Ritland, 2005; Koo, 2008; Ginns & Ellis, 2007; Dutton et al., 2002; Peeraer & Van Petegem, 2010). These have been significantly shown to improve achievements made by learners during online courses (Lim, 2001). Conversely, the absence of such competencies may lead to learners having an apprehension towards the online environment and a refusal to use it (Piotrowski & Vadonovich, 2000).

In addition, other factors have also been highlighted as influencing the way in which students successfully interact with the OCL environment, such as competency levels towards technology (Ardies et al., 2015). For instance, learners who are not skilled in using a keyboard or are unaware of advanced functionality found within the software and hardware of ICT may subsequently hinder their participation during live chat sessions (Alves et al., 2008). An example of this is that within the OCL setting, learners can communicate amongst themselves by taking advantage of a text-based communication tool. However, if learners have little proficiency in using this particular tool, they are more reluctant to use it, which may dictate how much value and interaction they are able to give to the group (Zafeiriou et al., 2001). It is implied within collaborative learning research that students' participation within the OCL environment is considerably dependent upon their overall personality, skills and attitudes towards the adopted approach and technology. This includes their motivation to learn and implement the technology, a particular inclination towards a preferences approach and any previous experience of collaborative learning. Bernard and Rubalcava (2000) suggest that, in order to design and implement effective courses for collaborative online learning, it is

necessary to identify and capture the learners' profiles in relation to their knowledge, experience, skills and needs.

Within the online learning setting, there are those that prefer the flexibility that is found in their online courses and as a result they may regard group participation as a hindrance for them to progress at their own pace (Mason, 2005; Peach et al., 2014; Brindley et al., 2009). Consequently, such participants hesitate to participate in such situations or they choose to simply go through the motions and not become active during such collaborative sessions. Furthermore, for some learners, their reluctance to become involved in group participation can stem from their inability to work as part of a group (Harasim et al., 1998). This could be due to negative past experiences in working with others, such as idle or domineering peers, which left them in dealing with the majority of the work, or due to a low grade they received during a collaborative task, particularly when they felt this grade did not reflect their personal level of commitment, effort and contribution (Brindley et al., 2009).

A number of earlier studies have indicated that the discrepancies found within the learners' participation in collaborative settings can also be based upon their social or cultural background (Volman et al., 2005). For example, those who exhibit a more introverted personality or prefer to deliberate and analyse at their own pace are more inclined to accept asynchronous online discussions, as it allows them to articulate and present their ideas in a safe environment without the fear of criticism or mockery (Bullen, 1998). In addressing this, Lockyer et al. (2001) suggest learners are given relevant support to enhance their group process skills; as Kearsley (2000) highlights, learners have a limited amount of formal training in relation to how they are to effectively interact and collaborate with others. Palloff and Pratt (2005) suggest that learners should be given training on the skills that are necessary to deal with collaborative tasks, with clear instructions and expectations during such tasks, as well as promoting the idea of having mutual agreements and contracts in place with group

members on how they wish to collaborate and work together.

Furthermore, online learning can also create challenges for learners in the form of time constraints and the struggle to meet heavy workloads and schedules, as well as the lack of time/opportunity to schedule and engage with their peers online (Capdeferro & Romero, 2012; Koo, 2008; Chiong & Jovanovic, 2012; Gabriel, 2004). That is, individuals may have different times when they are available to meet online to discuss collaborative tasks, which makes it difficult for such meetings to take place (Capdeferro & Romero, 2012; Wang & Woo, 2007). Within her study, Gabriel (2004) found that a key issue students faced was the amount of time they were allocated to prepare and provide their responses during group discussion and feedback. Such time constraints have often meant responses or comments are somewhat superficial and lack meaningful content (Park & Bonk, 2007). Furthermore, although the flexibility of online courses is an incentive to many individuals for enrolment, this may be hindered as a result of having them work collaboratively, as they may regard participation in group work to violate and restrict this level of flexibility (Brindley et al., 2009). This could lead them to be passive or absent during such interactive learning sessions, as it does not suit their overall objectives and needs (ibid).

Another factor that can hinder learners from participating during group interactions is a lack of confidence in their own ability, to the point where they feel their ideas or comments will not bring any positive contribution to the group (Harasim et al., 1998). Additionally, learners may feel apprehensive about involvement in group discussion due to negative past experiences of similar situations, such as working alongside challenging or unproductive peers, being stuck with completing the majority of the workload or receiving a lower grade than they were expecting as it did not reflect the amount of work, commitment and contribution they gave towards the final group project (ibid).

To sum up, as shown in Table 2.2, students' characteristics have been extracted from

the literature in influencing the effective use of the collaborative approach within the online environment. These include: how much awareness and value the learners give to this setting; their willingness to interact with their peers and tutor; how their previous experience has shaped their current use; their level of competency and skills in ICT and in how they collaborate with others; as well as fulfilling their need to have adequate training and guidance to use it effectively. These are key areas that require much consideration by the stakeholders in order to ensure learners will maximise the benefit in using this environment effectively.

Table 2.2 Students' characteristics

References	***Themes***
Dabbagh (2007), De Hei et al. (2015)	Understanding and appreciation/ values
Palloff & Pratt (2007), Xiong & So (2010)	Willingness
Colbeck et al. (2000), Hostetter & Busch (2006)	Previous experience
Ardies et al. (2015)	Competency
Bullen (1998)	Safe environment /fear of criticism
Capdeferro & Romero (2012)	Time constraints
Kearsley (2000), Palloff & Pratt (2005)	Training and guidance
Johnson & Aragon (2003), Schroeder et al. (2010)	Prior knowledge

2.3.2.3 *Tutor's role*

Online tutoring is regarded as playing a vital role towards the overall success of the online learning environment (McPherson & Nunes, 2004). Pelgrum (2001) suggests that the success of incorporating innovative practices in ICT to enhance learning may largely depend upon the knowledge and skills of the tutor. It is therefore understandable that a deficiency in such areas has become an obstruction in the integration of ICT within the educational system

(Mamun & Tapan, 2009; Pelgrum, 2001; Ihmeideh, 2009). This is because this aspect of integration requires knowledge and an understanding of how technology within the learning environment works, so that this can be effectively conveyed to the student body (Morgan, 1996). Berner (2003) also illustrated this point in his study, which showed that staff technological competency levels were the primary indicator for how effectively ICT was used within teaching. The tutors' overall perception and behaviour towards the use of technology can also have considerable influence over the students' attitude and use (Webster & Hackley, 1997).

In relation to the attitudes and beliefs pertaining to the OCL environment, this refers to the opinions and information that staff members may hold towards the OCL environment practice and its objectives, as well as how this relates to their pedagogical beliefs within the educational context. According to Chang (2008), the pedagogical beliefs of online learning can be divided into main components. These include the importance of web-based technology, the use of a constructivist approach, and an individual's preferences (ibid). Moreover, as part of a qualitative study that explored the tutor's beliefs in light of their use of technology, Ottenbreit-Leftwich et al. (2010) found the tutor's beliefs had an influence over how they integrated technology in teaching. This confirms that the personal beliefs of the tutors towards instructional media and the online learning setting are clear indicators of whether they will use it (Hermans, 2008).

In light of this, reliance upon the tutor's ability to implement a collaborative learning approach within the online setting should be established, in order for them to facilitate the development and progress of their learners (Clark & Mayer, 2011). Motivating the learners to participate in the OCL environment can come from the tutor through a number of key aspects, including their positive attitude in using technology and an online environment, their approach to teaching, and how well they take control over technology during sessions

(Albirini, 2006). Research has also shown that there is a positive relationship between the effective use of an online learning setting and student motivation, which may be due to the tutor's immediacy of technology (Rovai & Barnum, 2007). Therefore, tutors should be aware of this and ensure their immediacy behaviour is maintained (Richardson & Swan, 2003; Arbaugh, 2001).

An important aspect in regards to the attitude of the tutor towards the online learning environment is in how they perceive this environment benefit the learners' overall learning experience (Sabzian & Gilakjani, 2013). When defining the tutor's attitude towards implementing collaborative learning within an online setting, Fishbein and Ajzen (1975, p.6) describe attitude as a "predisposition to respond in a consistently favourable or unfavourable manner with respect to given object". Schafer and Tait (1986) further refer to attitude as certain feelings or tendencies that the individual has, which can influence their decision concerning ideas, other people or objects. These can either be positive or negative and are often formed when individuals develop certain relationships with people or objects. In light of this, attitude is comprised of three key elements: behaviour, cognition and affection (Zimbardo & Leippe, 1991). The behaviour element refers to the individual's overt conduct towards others or objects, whilst the cognitive aspect involves an individual's knowledge concerning other people or objects. Lastly, the affection component refers to a person's inclination towards other people or objects based upon their emotional inclination or liking (ibid).

In addition, it has been proposed that the tutor's attitude towards technology is critical in how effectively ICT is incorporated into the teaching environment (Mueller et al., 2008). That is, tutors should show that they are comfortable and confident in using technology to illustrate how valuable this is towards the learning process and in adopting it within the curriculum. If this is not the case, learners may have a low level of confidence and

expectation in how this type of learning setting can enhance their progress and as a result, they may refuse to use it (Cox et al., 2003; Snoeyink & Ertmer, 2001).

Moreover, for an initiative like this to be successful, which seeks to implement technology within an educational environment, research clearly establishes that this is dependent upon the overlying attitudes of the staff members that are involved (Al-Erieni, 1999; Albirini, 2006; Clay, 1999; Hamdi, 2002; Zhao et al., 2002). With respect to this, Kirkup and Kirkwood (2005) differentiate between two types of tutors: those who are 'innovators' and exhibit enthusiasm for technology due to its value, and those they refer to as 'adopters' who may not show the same level of enthusiasm, but will adopt it if evidence shows that it can enhance learning. Other researchers provide similar insights into the types of tutors, such as Hermans et al. (2008), who classify them as those that either resist or are receptive towards the integration of technology based upon their educational beliefs and practices; while Mumtaz (2000) refers to the theories on teaching that ultimately influence the tutors' implementation of ICT.

Furthermore, some researchers have even proposed that the attitudes of the tutor have a vital influence over how the technology will be implemented and used (Mueller et al., 2008). In turn, there is a suggestion that those staff members who have a positive attitude towards new technology and exhibit ease and satisfaction towards incorporating it within their teaching, have a greater success in overcoming potential barriers or obstacles (Albirini, 2006; Hamdi, 2002). Yang and Yoo (2004) also highlight how the affection and cognition components within attitude play a huge part in the use of technology amongst staff members and that those who are positive towards the LMS will not only be able to overcome issues, but they will also be highly motivated in using it. However, Chen (2008) proposes that tutors with a positive attitude towards the use of ICT will not necessarily lead to an effective implementation of it by their students (Mueller et al., 2008); as Judson (2006) suggests, these

beliefs and practices towards ICT may have few associations.

In tandem with course design and rationale, the role of the tutor is equally important for collaborative learning (Brandon & Hollingshead, 1999). Therefore, to ensure the learners are comfortable in collaborating when using the online environment, it is vital that the tutor gives clear instructions and expectations during group projects (Palloff & Pratt, 1999), and that the tasks are achievable and adequately timed during the course (Bouchat, 2007). Anderson et al. (2001) and Berge (1995) further outline a number of essential duties that the tutor should adhere to. Firstly, the tutor's primary objective is to setup the online discussion, assign objectives for the discussion, provide the overall theme, prepare the timetable and outline the rules and procedures. Their next role is to encourage the students to contribute online through the use of questions and channelling the discussion towards crucial concepts and skills. The role of the instructor within an online environment is to facilitate the learning process and to motivate the learners to interact with one another (Thompson & Ku, 2006). Interacting online can have a positive effect on the learners in further developing online communities for the purpose of learning (Rovai, 2004). To achieve this, tutors will often ascertain clear guidelines on how learners should participate and interact with one another and the course materials, which, in turn, assist in developing this community (Palloff & Pratt, 2007).

In addition, building upon these duties, the tutor is then responsible for maintaining this interest by using direct instructions, such as checking understanding, raising awareness, providing feedback and knowledge from various sources. Whist ensuring this transpires, they also have a continuous social responsibility towards their learners, by creating and maintaining an environment that is conducive to learning; namely, a friendly setting that promotes the cognitive learning process and where students can contribute without fear of embarrassment. As the course advances, the tutor should provide regular feedback and

evaluation of the groups' progress (Anderson et al., 2001; Berge, 1995). To ensure this takes place, tutors should monitor the collaborative efforts within each group and, if necessary, intervene if any issues arise (Palloff & Pratt, 2005). In addition, the tutor should hold 'crisis clinics' in an effort to mediate between students when or if conflicts emerge. Lastly, the support provided by the tutor is not only online, as they should also aid their students with the necessary ICT skills so that they are comfortable in using the allocated technology (Anderson et al., 2001; Berge, 1995).

A course can be well thought-out and designed, but without an experienced instructor to deliver it effectively, there may be an absence of motivation and participation from the learners. Salas et al. (2002) concur, citing the teaching style to be the primary influence in encouraging collaboration and involving learners within any educational environment. Oakley et al. (2004) suggest that tutors ought to be upfront with the students during online courses. That is, they should offer guidance on how the collaborative learning approach within an online setting can be advantageous, as well as outlining any errors, mistakes and resolutions of such instances that have been experienced by new groups (ibid). It is also important to note that even though the tutor has a responsibility towards the learning process, the students are equally responsible for their learning during tasks.

A collaborative learning environment enables the tutor to adopt a facilitator's role, whereby they are there to aid the students in constructing and merging their knowledge as a result of providing them with previous knowledge and experience (Coll et al., 2014; Xin & Feenberg, 2006). Moreover, the tutor should take an active role within the collaboration process to help their students to work together as a group, as opposed to individual learners, which in turn will effectively maximise their ability and outcome (Alvarez et al., 2012). With reference to the differences in the tutor's level of ability in using technology, there is a direct influence over how effectively the tutor can guide the students to participate in their

collaborative learning tasks (Coll et al., 2014). Tutors are also in a position to encourage their students to adopt various roles (Abas & Fadzil, 2009). For instance, while conflict and disagreements within the group can sometimes be constructive for the end goal of a collaborative task, for some learners this may hinder their participation, as they prefer a different method of communication (Janssen et al., 2009). The instructor should be in a position to highlight that, whilst disagreements can be deemed negative or offensive, they can also be positive and beneficial if they are used to help the group learn from one another. This in turn allows the group atmosphere to be positive and friendly. The tutor should therefore retain a supportive role throughout the collaborative learning process, there to clarify any learning goals, help establish a meaningful and open learning task, as well as recommend any suitable resources that can be used to help complete the group task (Abas & Kaur, 2004; Abas & Fadzil, 2009).

There is an agreement amongst researchers that the guidance position and behavioural actions of the instructor within a collaborative environment provides adequate support in the learning process for the participants (Pea, 2004; Wallace, 2004). When adopting the online environment within education, the environment itself is very much student-centered, as it enables and facilitates the flow of analysis and information to occur between the tutor and learner (Garrison, 2007). However, the uniqueness of the online environment, where interaction towards higher levels of discussion are prevalent, will not transpire unless there is adequate monitoring, grounding, coaching, contribution and modelling from the tutor, specifically at the beginning of instruction (Brandon & Hollingshead, 1999).

In addition, the use of the collaborative approach allows the tutor's roles to be altered from the traditional understanding of a tutor. Kanuka et al. (2002) outline these changes from different perspectives, such as the tutor becoming a proficient questioner rather than providing all the answers, a guide for learning rather than a source of knowledge, as well as

one who facilitates a learning experience for the students, as opposed to simply providing them with content and materials. Thus, a prevalent obstacle encountered by many tutors is how to adjust to their new roles as an online tutor, when they have grown accustomed to their previous teaching experiences and traditionally defined responsibilities. This leads to a sense of confusion and certain inconsistencies between what they do in practice and what is expected from them. A study by Liu et al. (2005) investigated the perceptions held by online tutors in online MBA courses. The results revealed that they demonstrated diversity in how they perceived or enacted their responsibilities, whereby they put pedagogical roles (i.e. instruction designer, feedback giver) before others such as managerial or technical roles. Moreover, a significant factor that led to an impact over their roles and caused certain tensions was time management (Spector, 2005).

Research further indicates that OCL setting demands critical leadership from the tutor in order to be effective; this is despite the contention of some researchers, who believe students should remain independent and autonomous of the tutor in such environments. In order to achieve this, research suggests that the tutor should assume a facilitator role, which utilizes specific techniques to assist the learners' performance and interaction (Bernard & Rubalcava, 2000). This is supported by Garrison et al. (2001) who maintain that the absence of online tutors to facilitate discussion may lead to low levels of critical inquiry. It is therefore imperative that the instructor adopts the role of a facilitator as opposed to simply being the primary source of knowledge (Blumenfeld et al., 2006). Consequently, the student should modify their existing relationship with the tutor so that this occurs. From the tutor's perspective, they should ensure their moderating and guidance skills are adequate in order to ensure success within an online environment (Bonk et al., 2004).

In many instances, if the role of the tutor is to be the sole source of knowledge for the student, the student will more likely become a passive learner (Markel, 1999). However,

Ference and Vockell (1994) highlight that an effective tutor is one who can analyse their students and recognise their characteristics in order to see what method or approach of learning suits them and can maximise their learning. Moreover, research indicates that the expertise and enthusiasm expressed by the tutor during online asynchronous discussion are considered to be vital factors that stimulate active participation from the students (Oliver & Shaw, 2003).

In relation to what constitutes an optimal degree of intervention from the tutor during online discussion, some researchers suggest a balanced or moderate presence is ideal. Either extreme of being overbearing or absent can cause serious issues. Thus, when tutors are too dominant or come across as authoritarian, it can impede the autonomy of the student and prevent interaction. This leads to a tutor-centered discussion, wherein the students expect approval or the correct answers to come solely from the tutor (Dennen, 2005; Mazzolini & Maddison, 2003). Similarly, a lack of tutor input and guidance can cause the online discussion to cease to progress and students may lose motivation. It is more important that learners are kept motivated and encouraged by the tutor, in order for them to be involved in collaborative activities where they can share and present their ideas and opinions. One method that may be used to achieve this is by having tutors give a brainstorming activity or instruct group members to ask and answer non-threatening questions at the start of a task (Garrison, 2006). However, it should be noted that although tutors have an overall responsibility in providing the instructions to collaborative tasks, and although the majority can see the benefits of collaborative learning, there is a degree of reluctance towards this approach. This is because tutors also need to devise techniques and strategies to ensure this is implemented accordingly and to promote interaction between the task and the learners (Razali et al., 2015).

While the effective implementation of the OCL environment is dependent upon the

use of technology, it also relies on the overall characteristics of the tutor, which is significant in influencing how their students perceive this environment. As Zheng et al. (2015) and Fulton et al. (2015) propose, to ensure the course 'runs smoothly' and promotes collaboration, tutors should take a great deal of time to create a social online environment that is friendly and engaging, which encourages learners to be confident in expressing their beliefs, views and emotions.

In terms of how the tutor's role influences the OCL environment, it is necessary that tutors possess a level of competency in using ICT, which is regarded as a critical factor in the effective use of online learning environments (Aesaert et al., 2014; Volery & Lord, 2000; Evans & Kozhevnikova, 2011). Van Braak (2004, p.300) defines technology competency as "being able to handle a wide range of varying computer applications for various purposes". In addition, Ball and Levy (2008) state that computer self-efficiency is a key factor in the tutor's decision towards using it, which Shih (2006) asserts has a direct relation to their competency levels in using ICT. Thus, if staff members have the necessary knowledge and skills to use the relevant tools within a LMS, they will have no issues in utilising them for the purpose of teaching. For example, a study by Kersaint et al. (2003) showed that those who found technology to be easy to use and expressed a positive stance towards it, were more inclined to integrate it in their lesson plans. Equally, Bullock (2004) observed that this was a vital factor that also led to students implementing it in their learning experience.

Conversely, technology competency can also be the primary cause for staff members expressing their refusal to incorporate such technologies in their teaching, specifically if they lack the necessary skills to use the technology accordingly (Osika, Johnson & Butearu, 2009). In a study by Curbelo-Ruiz (2002), the level of technology competency that the tutors felt they had was an accurate indicator for how often they would incorporate it into their teaching, where those who deemed themselves to be competent in using web-based

technology would frequently employ it in their teaching. This direct correlation between competency levels of staff and its influence over the use of technology in the learning environment has been emphasised in a number of studies (Albirini, 2006; Ball & Levy, 2008; Birinci & Kılıçer, 2009). This in turn emphasises not only the need for staff members to have a basic understanding and level of skill to use such technology, but that their knowledge of how to effectively use virtual environments such as the LMS is equally important (İzmirli & Kurt, 2009).

Furthermore, another role of the tutor involves providing feedback to their learners, a process that allows tutors to deliver relevant information to their students on how to aid them in understanding what they are being taught. This also comprises showing the students what a standard of work looks like so that they can make the necessary modifications to improve their learning (Hattie & Timperley, 2007; Shute, 2008). This interaction between the learner and tutor is what ensures a positive learning experience is maintained. Moore (1989, p.2) elaborates upon this from the perspective of the tutor, stating that the tutor should, "stimulate or at least maintain the student's interest in what is to be taught, to motivate the student to learn, to enhance and maintain the learner's interest, including self-direction and self-motivation". Thus, their contact and interaction with individual learners enables them to clarify any misunderstandings, expound upon concepts or help their learners in achieving their learning objectives. In light of this, when the feedback that is given consists of clear guidance in how learners can improve their work, the level of achievement is greater and drives the learners to work harder and take further risks to find success (Brookhart, 2008; Hattie & Timperley, 2007; Shute, 2008).

Feedback is therefore regarded as a highly important factor in the learning process. As Menchaca and Bekele (2008) found, participants identified this as a major component in the success of using OCL. Thus, within the collaborative process, it is imperative that the tutor is

readily available to offer their feedback to the learners. Moreover, tutors need to continuously monitor group progress as the need to intervene may be required to ensure discussions and student focus are on track, as well as building a rapport and reassuring the learners accordingly (Brindley et al., 2009). It asserted however that feedback between tutor and student can cause students not to gain an insight from their peers, which means they fail to benefit from an opportunity in learning from their peers or gaining a different view on a task (Ertmer et al., 2007). This can subsequently reduce the quality of work and create a gap in their overall comprehension of the course concepts, further highlighting the need to incorporate e-learning and collaboration in education (Kahiigi et al., 2008; Kahiigi et al., 2009).

In summarising this section, Table 2.3 highlights the tutor roles that have been identified and extracted from the literature in influencing the effective use of the collaborative approach within the online environment. These include: the tutor's attitude towards the OCL environment; providing clear and appropriate objectives to be achieved during collaborative tasks; devising tasks that would motivate students to work collaboratively; adequate and appropriate support and guidance; an ability to encourage and motivate their learners to work collaboratively, particularly those who prefer to work alone; creating a friendly and safe online environment that is conducive for collaboration so that each member within a group contributes equally; possessing a satisfactory level of competency and skills in using the online environment; giving students the necessary tools to give feedback within their groups; and creating an environment where this feedback is valued and respected. One may therefore conclude that an absence or limitation of such aforementioned factors by the tutors will subsequently foster a limited use of this setting.

Table 2.3 The tutor roles

References	*Themes*
Ottenbreit-Leftwich et al. (2010)	The tutor's attitude
Palloff & Pratt (1999)	Clear and appropriate objectives
Palloff & Pratt (2007)	Adequate and appropriate support and guidance
Thompson & Ku (2006)	The tutor facilitates
Razali et al. (2015)	The tutor motivates and encourage collaboration
Fulton et al. (2015); Zheng et al. (2015)	Warm and friendly OCL environment
Evans & Kozhevnikova (2011)	The tutor's ICT skills
Menchaca & Bekele (2008)	Feedback

2.3.2.4 *Course characteristics*

In order to structure the collaborative learning process effectively, it is imperative that the design of the tasks is given careful consideration, with clear guidelines and techniques to engage group members and ensure they actively collaborate with one another (Barkley et al., 2014). In light of this, a number of factors should be taken into account during the design stage of collaborative tasks. One of these is to ensure the tasks meet both the course objectives and the skills and abilities of the learners in order for them to complete the tasks accordingly (Bozarth et al., 2004). Moreover, it is important when designing a task that students will interact and collaborate with one another; this can generate a greater success for the OCL setting if learners are able to share their ideas, consider alternatives and refer back to previous knowledge (Kershner et al., 2010 ; Warwick et al., 2010).

In addition, course design was identified as a significant factor in ascertaining the quality and quantity of interaction that occurs during a course (Swan, 2001). This also refers

to the type of interactivity that may be found, such as the learners' interaction with their instructor, the course content or their peers. The interaction between the learner and course material/content is a vital aspect for learning (Anderson, 2008). Kearsley (2000) further argues that whilst online learning is regarded as an individual activity, it can equally be seen as a social activity due to the interactivity that occurs. This interaction refers to the process that occurs when learners use the course content to receive new information, resulting in new perspectives, understandings or cognitive structures of the learner (Moore, 1989). Such factors commonly relate to the design of the online course and ensure they are offered appropriately, with clear structure (Östlund, 2008) and outlook (Abel et al., 1998).

The type of task, whether discussion topic or group activity, can also greatly affect the overall quality or the manner in how the task is completed. Jeong (2003) observed that students increased their participation and incorporated critical thinking skills during their discussion when they were given tasks to debate issues of various conflicting viewpoints. Moreover, both Meyer (2004) and Hara et al. (2000) highlighted that the type of interaction and responses from the learners was dependent upon the kind of task questions that were used to initiate a discussion. This was similar for problem solving activities or for questions that encouraged the students to share their personal experiences. In relation to the discussion topics, Guldberg and Pilkington (2006) found that topics where students could share their personal experiences would often result in long individual contributions, whereas general or less personal topics had greater interaction and discourse. The findings also revealed that the students only discussed topics they were familiar with, as participation was minimal in unfamiliar subject areas (ibid).

Furthermore, research further denotes that the type of task may direct the student to work collaboratively or cooperatively with their peers during group projects (Paulus, 2005). Collaborative approaches to certain types of task differed from a cooperative approach, with

students preferring the latter. However, those groups who had to synthesize in their tasks collaborated in their dialogues more so than did groups conducting tasks in which application was demanded.

A number of task types have been identified in the literature and will subsequently be expounded upon. One such type is the cognitive approach, which focuses on activities within a learning task that promote epistemic fluency. Morrison and Collins (1996, p109) define epistemic fluency as:

> the ability to identify and use different ways of knowing, to understand their different forms of expression and evaluation, and to take the perspectives of others who are operating within a different epistemic framework.

Thus, by applying a number of epistemic tasks within a collaborative learning group, epistemic fluency is achieved and can foster accordingly (Ohlsson, 1996). This includes explaining, arguing, predicting, evaluating, explicating, defining, describing and critiquing the context of a discourse.

Another type is the direct approach. This is comprised of utilising certain collaborative techniques which are able to formulate a task-specific learning activity, such as asking students to write a report. Not only are these techniques extremely well defined and specific, but they also often focus on specific subjects and can be applied to different grade levels, which means teachers are able to apply them within a task without much difficulty. Moreover, these collaborative techniques can be implemented as a template and therefore modified by the tutor to create different learning activities. Examples in using the direct approach can be found in structured academic controversy (Johnson & Johnson, 1993) and student teams-achievement divisions (Barkley et al., 2014).

Additionally, when students participate in collaborative tasks within the OCL environment, there are various factors that they depend on, such as the nature and context of

the task and how this has been set by the tutor, as well as the learners' self-confidence, both in the completion of the task itself and in their skills when interacting with such an environment (Benson et al., 2012; Witney & Smallbone, 2011; Cole, 2009). Researchers also assert that the task should also be made relevant for the learners by ensuring it comprises authentic, real-world and relevant content that can encourage collaboration to occur (Brindley et al., 2009). This is supported by Curtis and Lawson (2001), who found that learners were more enthusiastic and willing to collaborate with their group members if they were interested in the topic.

Furthermore, the effective use of collaborative learning occurs when the designed task requires various kinds of information from the learner, based in a number of consecutive steps and resolved through the contribution of each group member (Moreland et al., 2013). McGrath and Hollingshead (1994) propose a different typology: that the majority of tasks could be categorised in four items, negotiate, execute, choose, and generate. However, Brophy (1999) suggests that the tutor should provide various tasks within the teaching process. These can include ensuring there is structured content for the course and that it provides feedback on what the students have achieved, which in turn can also relate to how they encourage the learners in completing the task, as well as helping them to maintain their enthusiasm during these activities. Additionally, the task design should take into account differences in the skills and abilities of each group member, so that equal contribution to the task can be conducted. This, however, is difficult during the task design as it can potentially affect how much contribution each group member makes and how effective they are (Curtis & Lawson, 2001; Gundlach, 2011).

Individual accountability when using online environments is also viewed as a vital aspect within the learning environment, because it ensures everyone within a group has an equal responsibility towards the end objective. The task design should also encourage

interdependence of the learners, whereby accountability and ownership of the task is given to each group member, who are ultimately responsible for the success of the task as well as having a dependency upon each other. Johnson and Johnson (1994) suggest that success for collaborative learning lies in individual accountability and positive interdependence; the former refers to learners' responsibility for their individual sections within a task, while the latter refers to the combined efforts of the group to achieve their task objectives.

In addition, within a collaborative environment, although learners are placed in a group for the purpose of working together on an ill-structured task, this does not necessarily mean they will automatically collaborate. Johnson and Johnson (1996) therefore propose that, for collaboration to achieve a degree of success, all the group members should find a balance between positive interdependence and self-accountability. However, whilst undertaking tasks that require collaboration, learners must play an active role in doing so, as well as taking responsibility for themselves to carry out their allocated (and fair) share of the work, whilst also assisting their peers in the learning process. In contrast, if learners do not share any responsibility towards the task or feel individually accountable for it, the outcome is 'free-riding'. In many instances, this can occur when individuals within the group feel their contribution is worthless or disregarded, or it may occur when they are not awarded fairly (Kerr & Bruun, 1983).

Consequently, free-riders can have a detrimental effect on the rest of the group (Ruël et al., 2003), to the point that other members become frustrated for doing the majority of the work. This in turn causes them to lose their motivation and not give it their full effort or attention, as they are vehemently against the idea of being regarded as the person who did all the work whilst others in the group did very little. For effective collaboration to occur, positive interdependence amongst the group members should be present: this is established when all the members within the group realise a collaborative task will not be accomplished

unless they all work together for a mutual goal, and that their efforts are mutually coordinated with one another.

A positive and successful interdependency is therefore comprised of both socio-emotional and task-related features (Janssen et al., 2007; Johnson & Johnson, 1996). In relation to task-related interdependence, this refers to learners who seek to share their resources and views on a particular task, whereby they converse and negotiate different perspectives and viewpoints that ultimately help them to reach a consensus and end goal. As a result of sharing their personal opinions and information, it is envisaged that learners will have expanded their knowledge base as a result of the collaborative efforts within the group. Moreover, during the negotiation process, other group members may challenge perspectives and opinions that are put forth by individuals (Stahl, 2006). During this stage, weak arguments are disregarded, whilst other arguments may be defended and elaborated upon successfully, and any ambiguities highlighted and clarified. All of this is done to foster a higher-quality decision-making process and to also share understanding of a task amongst all the group members. Stahl (2006) states that by going through each of these processes, an individual's opinion can either be justified and supported by evidence or transferred by the knowledge of others within the group.

Furthermore, in relation to socio-affective interdependence, the group members find that their level of commitment towards the group goals is as a direct result of their strong affiliation towards the group and during their engagement in the task (Royal & Rossi, 1996; Wellman, 1999). It is therefore imperative that the members within a group show respect for each other's opinions and viewpoints, as well as engaging with one another in a trustworthy manner (Johnson & Johnson, 1996; Dooly, 2008). In contrast, exhibiting negative emotions will have a negative influence over the rest of the group and subsequent group efforts. In relation to courses that adopt the OCL setting, the characteristics that are considered to be

vital for positive interaction to occur are the group size, instructor involvement, and whether the end product from a task is individual or group-based (Lee, 2010). With reference to group sizes, this can substantially influence the students' participation to collaborate (Johnson & Johnson, 1994). For instance, within smaller groups, it is easy to not only identify active and non-active group members, but to also motivate and encourage participation from those that are inactive; smaller groups also enable a greater degree of engagement and individual contribution (Bates, 1995; Hammond, 2000; Wegerif, 1998). This means small group sizes during a collaborative task could be more appropriate, as they encourage interaction in groups, particularly for discussion and ensuring equal contribution of an assigned task (Finegold & Cooke, 2006). It has further been highlighted that smaller group sizes may foster a suitable learning environment, experience and higher academic achievement (Springer et al., 1999), while Brindley et al. (2009) also found that learners hold a preference for working in smaller groups as opposed to larger ones. Moreover, one of the reasons that group performances are affected when the group size increases is often due to the need to increase resources and the greater sharing of opinions, which can lead to a level of reluctance from others to share their thoughts (Moreland et al., 2013; Saavedra et al., 1993).

As for the type of product that may be generated from collaborative activities, it is argued by Cohen (1994) that an assigned task within a course will govern how the members of the group interact with one another. For instance, courses or tasks that are designed to foster high levels of collaboration will encourage the learners to be more active within the group. Thus, if a task is designed for the group to produce a group product, it is necessary for all the members to share their knowledge, take responsibility in sharing the task equally amongst themselves, and to work closely together in deciding how to conduct and complete the task (Lee, 2010; Alrayes, 2012). In contrast, if a task is designed with few elements that encourage collaboration, there will be a lack of group interdependency and, as a result, group

members may be prevented from collaborating effectively during the whole task (Lee, 2010). Online environments have additionally led to the formation of learning communities, which have also been regarded as significantly promoting collaborative learning and social interaction amongst learners (Hiltz, 1998; Kreijns et al., 2003). This has been discussed extensively by researchers (Brandon & Hollingshead, 1999; English & Yazdani, 1999; Kreijns et al., 2003; Tolmie & Boyle, 2000), whereby the use of group-work online has improved positive interdependence.

One must also note, however, that group sizes have been discussed in detail within literature and have also left researchers with various opposing views. Thus, while some advocate the effectiveness of smaller groups, others such as O'Neill et al. (2011, p.944) believe group size is not necessarily an important issue, stating that, "the technology available today allows large groups to work quite well". In this regard, the existence of large groups has proved advantageous as it ensures a greater diversity of ideas and contribution from group members. Smaller groups generate less diversity in their resources and ideas as a result of the reduction in numbers. However, large groups lead to certain disadvantages, particularly a difficulty in identifying and allocating available roles for each individual within the group process, as well as an increased likelihood of 'free-riding' (Piezon & Donaldson, 2005; Schwier, 2012). In addition, research implies that interaction between participants may vary according to the size of the group. For instance, those in smaller groups exhibit a bilateral method of interaction as a means of establishing a consensus between pairs, whereas the level of communication is less interactive within larger groups (Gigone & Hastie, 2013). Moreland et al. (2013) describe a particular trend in relation to this, whereby it is more likely that a smaller number of participants will dominate the discussion as the group size increases. Consequently, researchers have argued against the notion of having large groups, wherein they require individuals who have all the relevant skills in order to function effectively

(Johnson et al., 2014).

Thus, while no formal agreement on what constitutes an optimal group size has been given, researchers have advised that this should be between three and five members (Lee, 2010). A group of five ensures there is ample opportunity for each member to explore and express their opinions and feelings, and that they will be taken into consideration during group decisions (Stahl, 2006; Lee, 2010). However, it is interesting to note that Bean (1996) proposed five to six as a more effective group size, while researchers such as Moreland et al. (2013) and Stahl (2006) argue that groups with fewer than five members are problematic, as those with lesser numbers may experience varying group dynamics. For instance, it is likely that groups of three will subdivide into a pair and one singular member, whereas a group of four will separate into two unique pairs (Moreland et al., 2013). According to Johnson and Johnson (1994), this can be valuable and effective during face-to-face settings. Furthermore, a pair (two members per group) is unlikely to yield extensive ideas or possess a great deal of skill, nor will it cause any difficulties in resolving conflicts (Lee, 2010). As for groups above five members, Oakley et al. (2004) suggest that they will more likely experience free riders. While this area of research is necessary to explore, it is not as applicable in terms of asynchronous online environments because the functionality of such an environment warrants both small and large groups to work effectively. Thus, for group projects to be successful, Yamane (1996) offers three important steps: 1) the group should be composed of members who share common interests and availability; 2) once this has been formed, the group should allocate specific roles for each member, such as a discussion leader, meeting coordinator and reporter; and 3) they should continue to monitor the group's progress and evaluate the focus and direction of the group by means of suggestions or intervention.

In addition, if the team members have a certain level of familiarity with one another, it is argued that this can lead to a greater level of interaction, collaboration, communication

and participation (Janssen et al., 2009; Stark & Bierly, 2009). This social aspect and the overall social dynamics within groups has yielded much growing debate and contrasting views in existing research, specifically on how it can affect the group performance in a negative or positive manner. One argument is that familiarity of the group members can improve performance and encourage collaborative learning. This is also the case for social relationships, regarded as one of the influential factors of effective collaborative learning. Moreover, Spiro et al.(1988) affirm that familiarity causes greater motivation among learners, while others see it as being a means of highlighting and resolving deficiencies in certain teaching-learning methods (Adams et al., 2005; Mennecke et al., 1995). Learners who are familiar with their peers are more likely to have a positive experience in collaboration, as they often feel more at ease to express themselves and disagree with others, which in turn allows for opinions to be diverse, exploratory and critical (Janssen et al., 2009). That said, others such as Maldonado et al. (2009), Dutson et al. (1997) and Newcomb and Bagwell (1995) argue there is no correlation between performance and familiarity, or that it may even result in a negative outcome.

Another key factor that is regarded as fostering a positive environment for group members relates to effective group coordination, which in turn can encourage valuable interaction and input (Kwon et al., 2013). Through this, learners exhibit a high degree of positive interdependence, wherein they are keen to support one another and are less anxious in working together. Thus, having accountability from individual members and their commitment in fulfilling the objectives of a task are vital to ensure there is harmony and trust within a group (Tseng & Yeh, 2013). Nevertheless, if a group is formed through random selection and not by choice, there is evidence to suggest this could affect how group members interact and engage in the collaborative process (Lai, 2011; Gundlach, 2011). In contrast, in studies where participants were given the choice to select their own groups and topics, the

group dynamics were positive and encouraged further socialising and interaction (Juwah, 2006). Thus, in order to maximise the use of the OCL environment, although a course should be designed with clear parameters and explicit learning outcomes, it should also be flexible enough to take certain student preferences into account, such as group choices, member roles and any intricate details of a topic. As explained earlier, when learners feel they are in control of a task and take ownership of it, they will be more engaged and accountable towards the task at hand (Brindley et al., 2009).

Furthermore, within the learning activities that are designed and organised as part of a course, it is important to take social psychological processes into consideration. This includes creating the groups, identifying and defining their structure, and maintaining any relevant social relationships with group members and staff (Kreijns et al., 2007). It is evident that individuals who engage in a learning programme are keen to participate so they can seek personal approval and support from their peers and staff alike. Furthermore, it is necessary for individuals to have a positive sense of self-worth, whereby their contribution is seen as having an equally positive effect on the group and the learning environment (Francese et al., 2007).

Research has also indicated that working as part of a group can demand a great deal of time and effort, particularly when there is a need to agree upon various opinions or to schedule group meetings (Yamane, 1996). This can sometimes be a cause of dissatisfaction amongst group members and towards the collaborative environment. However, when designing tasks that generate collaborative learning, it is necessary that students are given ample time to schedule, plan and organise the task accordingly. The need for learners to actively engage in discussion and to collaborate with one another takes time. Moreover, the quality of the learning experience may be affected if the task requires an excessive amount of work to be completed (Garrison, 2006).

Furthermore, interacting with others and expressing certain views may be the cause of conflicts amongst group members, which can also be an issue that needs to be addressed. As highlighted by researchers, conflicts may take place at two levels: at the task level and at the relationship level (Simon & Peterson, 2000; De Dreu & Weingart, 2003). Task conflicts refers to instances when group members express their disagreement on the task itself, such as how it should be carried out, whereas relationship conflicts are more personal and refer to individuals possessing a dislike for other group members in particular. Interestingly, Simons and Peterson (2000) have found that conflicts from the task level have a direct correlation with those at the relationship level.

The existing research provides two distinct perspectives on how conflict influences and functions within a group. From one perspective, conflict is seen as something negative, destructive, and causing the group to become ineffective; thus, researchers assert that it should be minimised and managed accordingly (Brown, 1983; Jehn, 1997; De Dreu & Weingart, 2003). In contrast, others state that conflict is an inevitable by-product of various interactions and, as a result, it should be used to benefit the team by channelling it towards fostering innovative and creative discussion or ideas (Schweiger et al., 1989; Janssen et al., 1999). What is therefore evident in light of conflict is that the outcome is dependent upon how the group chooses to deal with it. In other words, learners should acquire the necessary skills for open, respectful debate and dialogue, learning how the ideas from their peers can be challenged constructively, as opposed to challenging the individual, which can generate personal attacks and cause a rift in the group dynamics.

In addition, learners may also exhibit infuriation or anxiety towards collaborative learning when they are first exposed to it (Felder & Brent, 1996). This is because it can oppose their learning preference, such as learning alone (Ragoonaden & Bordeleau, 2000). It may also be a source of frustration due to the interdependence of group members during the

completion of a task. There may also be challenges that groups face when they are culturally diverse as this can often lead to differences such as language, preferred style of communication and unfamiliarity with those that have different educational/cultural experiences (Volet & Karabenick, 2013). In contrast, more positive experiences in collaboration and interaction transpire when individuals of a group know one another. This can even be found in how they disagree amongst themselves as they are able to express themselves more freely, which in turn nurtures the group to be more critical and exploratory in their opinions (Janssen et al., 2009). Incorporating assessment in the OCL environment appears to have generated a positive effect in increasing student participation; however, this may not only promote such interaction, but in certain cases hinder it. For instance, Oliver and Shaw (2003) found that students assigned a low priority to participate online when there was no assessment involved. This was mirrored in Fung's (2004) study, which also highlighted low participation when it was not made obligatory.

Thus, one may question whether assessment is effective for the overall learning experience, as it could encourage students to only participate during group interactions for their grades, and not to contribute constructively during discussions. To determine whether learners are participating within an online collaborative environment, assessment is a suggested technique that can illustrate the importance of group learning. Swan et al. (2006, p. 45) elaborate upon this, asserting that assessment can show the value of the process for group work as well as the outcome itself, stating, "Assessment can be seen as the engine that drives student course activity, online or off. It is particularly important in encouraging and shaping collaborative activity online". To achieve this, it is vital that the assessment of a project/task is fully structured and that there is a clear evaluation process for individual and group performances within the task (Barkley et al., 2014). Strijbos (2011) highlights that the assessment process for collaborative learning is not necessarily addressed as an intricate

component in the design process.

To sum up, Table 2.4 provides a list of course characteristics and group sizes that have been acknowledged within the literature as having the potential to influence the effective implementation of the collaborative approach within the online environment. These are: the type of task that has been given (i.e. debate/discussion); group composition and group sizes; familiarity in knowing the other group members; having a balance when tasks are distributed; holding each group member to account during the task; and assessment.

Table 2.4 Course characteristics

References	***Themes***
O'Neill et al. (2011)	The structure of the task
Meyer (2004)	The type of task (i.e. discussion)
Johnson & Johnson (1994)	Individual accountability
Springer et al. (1999)	Group size
Adams et al. (2005)	Knowing group members
Garrison (2006)	Sufficient time
Swan et al. (2006)	Assessments

To summarise this section, Table 2.5 illustrates the range of factors that have influenced how the collaborative approach may be implemented effectively within an online environment. These factors include technology related factors, students' characteristics, tutor roles and course characteristics; all of which have been identified within this section as having a clear influence over the effective implementation, in order to provide an appropriate platform for collaborative learning within an online environment (these have been discussed in detail in the Section 2.3.2). This table may therefore be used as a guide to structure the focus throughout of this study.

Table 2.5 Overview

References	***Themes***
O'Neill et al. (2011)	Accessibility to the technology
Ghoniemy & Fahmy (2010	LMS interface/easy to use
Alaugab (2007)	Adequate internet speed
Menchaca & Bekele (2008)	Existing OCL tools
Hart (2012)	Technical support
Dabbagh (2007), De Hei et al. (2015)	Understanding and appreciation/ values
Palloff & Pratt (2007), Xiong & So (2010)	Willingness
Colbeck et al. (2000), Hostetter & Busch (2006)	Previous experience
Ardies et al. (2015)	Competency
Bullen (1998)	Safe environment /fear of criticism
Capdeferro & Romero (2012)	Time constraints
Kearsley (2000), Palloff & Pratt (2005)	Training and guidance
Schroeder et al. (2010)	Prior knowledge
Ottenbreit-Leftwich et al. (2010)	The tutor's attitude
Palloff & Pratt (1999)	Clear and appropriate objectives
Palloff & Pratt (2007)	Adequate support and guidance
Thompson & Ku (2006)	The tutor facilitates
Razali et al. (2015)	The tutor encourage collaboration
Fulton et al. (2015); Zheng et al. (2015)	Warm and friendly OCL environment
Evans & Kozhevnikova (2011)	The tutor's ICT skills
Menchaca & Bekele (2008)	Feedback
O'Neill et al. (2011)	The structure of the task
Meyer (2004)	The type of task (i.e. discussion)
Johnson & Johnson (1994)	Individual accountability
Springer et al. (1999)	Group size
Adams et al. (2005)	Knowing group members
Garrison (2006)	Sufficient time
Swan et al. (2006)	Assessments

2.4 Theoretical Framework

Having addressed the various factors that influence the OCL environment, it is necessary to highlight the theoretical framework that is adopted within this study. The rationale behind this is to have a clear understanding over certain aspects that may influence the students' collaborative learning experience within an online environment.

2.4.1 Learning theories underpinning OCL environment

Within the theoretical framework of OCL environments there are various key learning theories that have been derived and adopted for the purpose of collaboration. The focus

within such theories is based upon an underlying assumption that individuals are seeking to construct their knowledge, which, in the context of an OCL setting, occurs as a result of learners interacting with one another due to sharing prior knowledge or building it as part of a team. Suzuki and Kato (2002) further state that learning occurs due to a process of changing social relations within a group. Learning theories therefore offer an explanation for the learning process, which is the manner in which individuals acquire their knowledge. However, it should be noted that there is no one learning theory that can be referred to as an explanation for the various types of learning. Theories differ depending upon the context, individuals and learning method. As a result, during the learning process, many theories may be proposed which can not only coexist, but may also complement one another.

Although there has been much debate and research conducted on the implementation of different learning theories, a detailed analysis of this is beyond the scope of this study; however, this thesis seeks to provide a summary for the learning theories that have been discussed in reference to the OCL environment. Whilst the OCL setting is derived from sociocultural theory, social constructivism learning theory and connectivism theory, there are other theories which go beyond this, such as social cognitive theory and the theory of self-efficacy. Among these theories are concepts and approaches that represent a learning process where learners construct their knowledge based on interaction within a group or particular environment.

2.4.1.1 *Sociocultural theory*

Sociocultural theory has been widely used in a number of disciplines such as psychology. This theory is adopted as a way of raising awareness for any circumstances that the learners may have, as well as identifying how certain factors such as their surroundings, culture or social environment can affect their learning and behaviour. Sanderson (2010, p.19) defines

this as “a perspective describing people’s behavior and mental processes as shaped in part by their social and/or cultural contact, including race, gender, and nationality.” Vygotsky (1978), who devised the sociocultural theory of learning, stated that individuals first gain their cognitive skills through social interaction (interpersonal) and then internalise this (intrapersonal). In other words, social interaction plays a primary role in cognitive development. Vygotsky further emphasised these two stages as being necessary for effective learning to take place. He states,

> Every function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals (Vygotsky, 1978, p.57).

Thus an example of the first, or interpersonal, stage could be where the learner is involved in a group problem-solving task. Within this group, there should be collaboration or guidance from more able peers, causing the individual to interact with them socially for a particular objective. The guidance the individual receives from their peers consequently helps them to internalise their learning, which makes it a part of their cognitive capacity. This leads them to the second stage, the intrapersonal stage, where the learner can now utilise their cognitive process to solve problems by him/herself (Bonk & Kim, 1998 ; Lantolf et al., 2015). The need for more knowledgeable individuals or peers within a group is highly emphasised by Vygotsky, as they are vital for the learning process and in establishing the construct for “the Zone of Proximal Development” (ZPD). The ‘zone’ this concept refers to is described as the individual’s willingness to progress to higher levels of learning and comprehension, whilst also acknowledging the need for additional support to reach it (Newman & Holzman, 2014).

2.4.1.2 ***Social constructivism***

The theory of social constructivism emphasises knowledge being built as a result of the

sociocultural context (Richardson, 1997). As learning is viewed as a social activity, Swan (2005) explains that the adoption of social constructivism within an online learning environment is vital as its features allow meaning and knowledge to be constructed. For instance, this environment focuses on the role of social interaction for learning and therefore enables collaborative activity, communication and interaction within groups to occur and be its primary focus.

Moreover, the objective of collaborative learning, which one could deem as an offshoot for social constructivism, is to build knowledge through teamwork, active learning, purposeful interaction with others and the learning-by-doing approach. Thus, those that are able to contribute to team discussions due to their prior knowledge on a subject can be a cause for developing the learning process and achieving successful learning outcomes. It has been clearly established within literature and research that collaborative learning is derived from Vygotsky's sociocultural theory of learning, as outlined above. Vygotsky (1978) explains the sociocultural theory using his theory and application of social constructivism.

Thus, collaborative learning occurs when individuals work together as part of a group in an attempt to construct the understanding, meaning and resolution of a particular issue, in order to provide the outcome of a product. Conversely, this approach to learning may transpire when individuals within a community are actively engaged and learning occurs as a result of implicit or explicit collected efforts.

Although this approach is rooted within Vygotsky's theories, it also centres around Piaget's theory that individuals will begin to learn when they are 'cognitively ready' (McLeod & Green, 2009). By amalgamating both these concepts, collaborative learning is formed as a means of providing individuals with a suitable environment of support, where they are grouped together and are able to learn from one another. Evidence affirms the benefit of using collaborative learning, highlighting that this approach has been shown to

increase the learning levels of all the group members, particularly when constructing complex knowledge (Rogoff, 1998; Stahl, 2006; Chi, 2009). This also includes developing the individual's critical thinking skills by fostering an environment that is conducive to challenging other group members' opinions and ideas, allowing them to mediate, interact, agree and subsequently formulate group conclusions (Chi, 2009; Stahl, 2006). Equally interesting in this regard is that when members within a group come from different backgrounds, they are all able to input from a number of different perspectives; this approach also teaches them to focus on common goals.

Learning via social interaction is an important concept that is found in the social constructivism learning theory. The occurrence of interaction during the learning process is regarded as a fundamental tool for developing cognitive skills and acquiring relevant knowledge (Woo & Reeves, 2007). Chickering and Gamson (1987, p.16-17) comment on the achievement of high quality in the learning process, stating,

> good learning, like good work, is collaborative and social, not competitive and isolated. Working with others increases involvement in learning. Sharing one's ideas and responding to others; improves thinking and deepens understanding.

Thus, the concept of collaborative learning involves engaging learners to construct their knowledge; creating interdependency amongst the learners; applying active social interaction principles; and encouraging the learners to share their own views and ideas. To achieve this goal requires commitment, responsibility, accountability and interdependency.

Furthermore, existing research in relation to collaborative learning has shown that it is guided under the umbrella of the social constructivism theory (Johnson & Johnson, 1996). Duffy and Cunningham (1996, p.171) define this constructivist perspective of learning as comprising a number of key beliefs, including "1) an active process of constructing rather than acquiring knowledge and 2) instruction is a process of supporting that construction rather than communicating knowledge". Moreover, the social constructivism theory as

outlined by Vygotsky (1978) proposed the concept that knowledge is built socially through interaction and collaboration as a means of solving and understanding problems. So and Brush (2008, p.320) concur, stating the development of knowledge will be present if social interaction and collaboration occurs with "more capable and knowledgeable others". Thus, the collaborative processes motivate learners to build their knowledge through their own views and understanding, whilst also attempting to negotiate a shared understanding with their peers (McAlpine, 2000). In doing so, knowledge may be constructed by interacting with other learners, using techniques such as discussing, negotiation and sharing.

2.4.1.3 ***Connectivism***

Another learning theory that has been offered is connectivism, a modern learning theory proposed by Siemens (2005), who argues that the effect of technology has influenced the manner in which knowledge is constructed. The premise given by Siemens is that, as we currently live in a digital age, learning is created by interactions that individuals have with different sources of knowledge. That is, individuals do not solely rely upon their own knowledge acquisition; they also participate and interact socially with various communities, online social networks or with others during online collaborative tasks. Thus, learning is comprised of the retrieval of information from the individual themselves, others and also from technology, which are all used to collaborate in the construction of knowledge. In other words, Siemens views this theory as a means for individuals to connect with one another and with technology. In doing so, learners can effectively create and maintain learning communities and networks, which can help ensure the sharing and co-construction of information occurs.

In applying this to the OCL environment, the connectivism learning theory is highly applicable as it enables many of the features found within an online collaborative setting to be implemented effectively. For instance, a collaborative learning environment requires

knowledge to be transmitted amongst members of a particular group for the purpose of achieving success in the completion of a given task. The connectivism theory therefore focuses on this aspect of learning and seeks to promote group connectivity and collaboration to effectively acquire these necessary skills.

2.4.1.4 *Social cognitive theory*

The social cognitive theory (SCT) has been used in a number of disciplines including psychology, communication and education. This theory states that elements of a learner's acquisition of knowledge are related to their social context, where the learner can draw from observations they make on other experiences and interactions, as well as influences from external media (Bandura, 2011). This applies to the collaborative learning approach due to the premise that this approach necessitates learners to construct new knowledge together. Thus, teaching strategies within collaborative learning drive learners to work together in a social context and by reflecting on their peers (Meyer, 1998).

Cognitive theories have investigated cognition, which is regarded as the mental processes an individual makes. Consequently, high cognitive achievements use inquiry and the external world as a means of assisting individual cognition, further highlighting a certain social nature that can be identified within these sessions. Distributed cognition therefore surpasses the individual cognitive processes towards peers, materials or resources or to the environment and culture. Hutchins (2002) also states that culture is a valuable source for problem solving and learning as it provides intellectual tools that can help facilitate learning.

In addition, Piaget (1985) holds the view that cognitive development can occur when there is a conflict or disagreement between two cognitive entities. For instance, when two learners have conflicting opinions during a task, they undergo a 'cognitive disequilibrium', resulting in each rethinking their initial thoughts and viewpoints. In turn, as they seek to resolve this conflict, Piaget (1985) asserts that learners may modify their existing plan, in order to adapt

to the new information that they have been exposed to; based upon this, they subsequently begin to construct new knowledge. In such instances, because the focus lies in the individual learner's cognition and cognitive process to build knowledge, the social interactions between individuals and the social environments the individuals are situated in are important factors as they both help this process of knowledge construction to occur.

Within the social learning theory, the concept of self-efficacy requires significant attention, as it refers to the individual's belief in their own ability to execute certain tasks or behaviours successfully (Bandura, 1977). Various studies have shown that self-efficacy can be an underlying factor that influences an individual's decision to participate or interact with others (Brown & Inouye, 1978; Wood & Bandura, 1989). In terms of the OCL context, self-efficacy can refer to how confident learners are in using and engaging with the online collaborative environment. In many instances, learners who do not have confidence in their capabilities to cope with an OCL setting may subsequently harbour negative sentiments towards it and perceive its ease of use negatively. In turn, this may prevent them from accepting or using the environment.

In terms of an online setting, the collaborative learning process can be deemed as being relatively complex. McConnell (2006) proposes three approaches that may be adopted when analysing the collaboration process within online learning. The first of these is the process of group work, which relates to the learners' ability to engage and interact with the work that has been set. This could include their ability to create fruitful discussions, question or analyse the task at hand or their overall contribution to the task. This approach is central to the collaborative learning process, as it will ensure the learners are supporting one another in reaching their learning goal. As a result, they should be able to explore and discuss the course content, devise clear strategies for tasks, contribute towards the task and also deal with any internal issues that may hinder the group's progress (Dewiyanti et al., 2007). The second

approach is the social presence, which refers to how 'open' or comfortable the group members are in engaging with one another. Garrison (2011, p.34) elaborates upon this, defining social presence as "the ability of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal and affective relationships progressively by way of projecting their individual personalities".

Applying the theoretical framework within this research has helped provide a foundation to understand and explore the nature of the OCL environment and also identify what factors are interlinked in shaping the effectiveness of this environment.

2.4.2 A student-centered approach

Traditional education methodologies often characterise the instructors as directing the learning process, whilst the learners adopt a receptive and somewhat passive role towards their own learning and education. That is, learning is one-directional from the teacher, who is deemed the source of knowledge, to the student, who is regarded as one who receives the knowledge. In such instances, this traditional approach does not take into account any form of learner responsibility (Armstrong, 2012). Subsequently, as a result of certain progressive changes within education over the last century, in addition to influential findings from educational psychologists, educators have advocated the adoption of more 'group work' and 'hands-on' activities in replacement of the traditional approach. One such significant change is the notion that students are actively able to build their own knowledge and not be solely reliant upon the teacher as the source of knowledge. Certain theorists such as Vygotsky, Piaget and Dewey have been influential in highlighting how learners learn; they are largely responsible for the shift in education by inverting a teacher-centered approach to a student-centered one. Thus, students are now seen as the centre of the learning process, enabling them to contribute towards this process themselves. As a result, many learning sessions are

more ‘hands-on’ activities and help learners to develop a better understanding of what is being taught (Northrup, 2001; Atkins et al., 2002).

The student-centered approach offers a number of learning styles that use various tools. This can include methodologies that are learning-conscious, a means of developing the learning environment for learners as well as the use of tasks for group interactions. Adopting these particular skills keeps students motivated to attend and gives them the confidence to achieve their educational lifetime goal (Atkins et al., 2002).The use of peer-to-peer interaction (i.e. group work) has been highlighted as a means of increasing knowledge. Within such interactions, the teacher is placed closely to the peer level, which can result in an improvement in knowledge and learning, ultimately supporting the learner. Vygotsky’s ZPD states that learners are able to effectively learn from one another. In such cases, the concept of scaffolding is imperative, whereby learning is built upon step by step and from interactions from all. Vygotsky (1978, p.89) asserts:

> Learning which is oriented toward developmental levels that have already been reached is ineffective from the viewpoint of the child’s overall development. It does not aim for a new stage of the developmental process but rather lags behind this process.

Within the Saudi education system, the most frequently used teaching method is teacher-focused and dedicated to lectures and discussions within lectures (Al-Keaid, 2004). Teachers spend little time on interactive methods and tend to focus on communicating through lectures (Eggen & Kauchak, 2001). Consequently, many Saudi universities predominantly adopt directed teaching as their preferred method of teaching. Furthermore, directed teaching focuses on imparting knowledge by the instructor through their method, where the teacher selects, structures and explains the concepts, asks students and provides feedback; in this situation, everything is under their control (Eggen & Kauchak, 2001). It is possible for this to be a student-centred method if the students practically examine and respond to the teacher’s

questions; the teacher's feedback should therefore be constructive and provide an opportunity for learning (Eggen & Kauchak, 2001).

However, it is often found that teachers in Arab countries believe in delivering information through teacher-centered approaches (Pratt, 2002). This states that knowledge can be contained in either books or thoughts, and imparted through lectures accessed via tests. Thus, these types of teachers believe in only transmitting information that they view as important and in fulfilling the needs of the learner. For them, students need to sit in the front rows of the classroom, and knowledge needs to be kept in their mind or on notes (Hofstede, 2001). Students are conceived of as empty vessels who can be filled by knowledge (Kember & Kwan, 2000). They further believe that all students should receive the same information taught in the class as a whole group, and that they do not have different needs as all learners are the same (Kember & Kwan, 2000).

In terms of Saudi Arabia, Al-Keaid (2004) conducted a study where a number of teachers in different universities gave their preference to the use of directed teaching as a teaching practice in their classrooms. The results showed that approximately 60% of teachers were of the view that directed teaching was an excellent strategy that can be used with undergraduate students. The study also concluded that the most important factor influencing the teachers' choice was their own knowledge and experience (Al-Keaid, 2004).

Another teaching approach frequently practised in higher educational establishments across Saudi is to incorporate discussion within lectures. While this approach still ensures everything is controlled or monitored by the teacher, it does enable students to participate in their learning by answering questions asked by teachers or by providing comments (Eggen & Kauchak, 2001). As such, there are a number of advantages, as well as disadvantages, to this method. In terms of key advantages, firstly, the comments or feedback provided by the learners can help teachers assess how well their learners have understood what has been

taught. Additionally, by having the opportunity to ask questions, learners may seek any clarification they require.

However, it should be noted that this method is limited in the sense that, if a student does not participate or is inactive during the discussion, it becomes similar to the previously mentioned approach, and tutors are unable to assess whether their learners have understood what was being taught. There is evidence to suggest the majority of teachers in a Saudi context prefer the method of lecturing and discussion in their teaching approach. Almushaiqih (1993) affirmed this in a study that examined a sample of 94 undergraduate students, who were asked to state which teaching approach they experienced during their course. The results revealed that 75% of the participants stated the lecture method was most frequently used. Moreover, a study by Al-Keaid (2004) focussed on Saudi professors and the factors that influenced their choice of teaching. This also found that a high percentage (84%) preferred to adopt lectures with discussion as a strategy in their teaching. One may postulate that this could either be prevalent in Saudi higher education due to a lack of teacher training or a lack of effective evaluation that causes this method to be preferred.

When adopting any form of technology, there have been a number of theoretical models proposed to help assist researchers in understanding how such technology may be implemented

2.4.3 The Technology adoption model

When adopting any form of technology, there have been a number of theoretical models that have been proposed to assist the researcher in understanding how technology is to be implemented. Two of the more common theoretical models that have been predominantly used when analyzing the adoption of technology are the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Technology Acceptance Model (TAM) (Davis, 1989).

2.4.3.1 *Theory of Reasoned Action*

Initially founded by Fishbein and Ajzen (1975) the Theory of Reasoned Action (TRA) was proposed as a means of understanding various forms of human behaviour (Davis, Bagozzi & Warshaw, 1989). TRA sought to identify the choices made by individuals and the intentions behind certain patterns of behaviour when they actually used technology (Ramayah et al., 2009). The hypothesis behind this theory is comprised of three constructs: firstly, when performing a particular action, individuals have a *behavioural intention* towards this action. Secondly, these intentions are governed by individual factors and/or social factors, wherein the individual factors are due to the individual's *attitude* towards the behaviour, whereas the social factors are influenced by the *subjective norms (*Ajzen & Madden, 1986; Fishbein & Ajzen, 1975). Thus, within TRA, the level of actual behaviour is assessed according to the individual's intention, meaning their behavioural intention is what decides whether they perform a particular action or not (Liker & Sindi, 1997).

2.4.3.2 *Technology Acceptance Model (TAM)*

Based upon Fishbein and Ajzen's (1975) Theory of Reasoned Action, Davis (1989) adapted the Technology Acceptance Model (TAM) as a definitive approach to analysing and evaluating users' attitudes towards the acceptance and use of technology (Di Benedetto, Calantone & Zhang, 2003). The model proposes that, upon accepting technology, users form two key perceptions that determine their attitude and behaviour towards that particular system (Davis, 1989). They are the 'perceived usefulness' (PU) and 'perceived ease of use' (PEOU), which ultimately implies the effectiveness and usability of technology (Davis et al., 1989; Davis & Wiedenbeck, 2001). These two variables could be considered as internal and external factors that influence an individual's experience and attitude towards the overall use of a specific technology (Davis et al., 1989; Venkatesh & Davis, 2000). In terms of

perceived usefulness, Sánchez and Hueros (2010, p.1633) state that this is "considered to be an extrinsic motivation for the user, and is defined as the degree to which a person believes that the use of a particular system can enhance work performance." On the contrary, perceived ease of use is intrinsic, whereby an individual evaluates the technology on how much effort is required to use it (Efferson et al., 2006). That is, the less effort, the greater the ease of use.

Thus, much of the research associated with the TAM theoretical framework has been utilized to examine the motives behind users and their performance with specified systems. In relation to these studies, research shows that the users' perceived ease of use significantly influences the perceived usefulness of technology (O'Cass and Fenech, 2003). However, Hu, Chau, Sheng and Tam (1999) state that there are other studies where this correlation is not supported empirically, although the link between the user's initial attitude and their final intention is established. This study focuses on addressing the initial acceptance of the collaborative approach within the online learning environment by learners in KAU, and analyzing the factors that relate directly to its implementation.

2.5 Summary

This chapter has provided a review of the literature related to the collaborative approach within an online learning environment. It has addressed the overall nature of this environment and how it has been used within education to encourage collaboration amongst group members. In addition, the contentions surrounding its use have been highlighted, with particular focus on a number of key factors that have affected its overall implementation in being an effective approach within education. Lastly, the chapter has provided the theoretical framework for an OCL setting, with a specific focus on the various learning theories and technology adoption models that are used to ensure the OCL environment is effective. The next chapter will highlight the methodology that is adopted within this study.

3 Chapter three: Methodology

3.1 Introduction

Conducting a research project can be an arduous task that requires critical choices in terms of selecting a suitable strategy and, within the field of educational research, there is diversity in the various approaches and philosophies that have been proposed in order to achieve the research outcomes (Cohen et al., 2011; Wellington, 2015). Therefore, in order to effectively plan a research project, it is necessary for researchers to consider what type of approach they will adopt, whether it be a quantitative, qualitative or a mixed methods approach (Creswell & Plano Clark, 2011). In light of this, the approach that researchers choose to implement is generally based upon the amalgamation of a worldview or assumptions pertaining to the research, research design and methods (ibid). Thus, as each approach within educational research is comprised of specific features (Cohen et al., 2011; Bryman, 2012), its implementation is dependent upon the nature of the research. As a result, this ensures the outcome is academically acceptable, which illustrates that the researcher has reflected upon their proposed assumptions and that their decisions are methodical and justified accordingly (Creswell & Plano Clark 2011; Tashakkori & Teddlie, 2010).

Furthermore, when a researcher makes a decision to adopt a particular approach, they should also consider the underlying philosophical principles that relate to ontology, epistemology and methodology (Guba 1990; Scotland, 2012). In this chapter, a detailed review of the aforementioned philosophical principles is given, focusing on the common paradigms that have been outlined in the research literature. Upon analysis of these underpinning principles in light of the nature of the research and its aims and objectives, an exploration is made of the various research methodologies, followed by a justification of the

chosen research methodology approach. An overview of the study instruments is also presented, particularly in terms of issues pertaining to their reliability and validity for the purpose of this study, as well as discussing how the data will be collected and analysed. Certain ethical considerations are also taken into account and the chapter terminates with a summary of the information presented.

3.2 Philosophical factors underpinning research

One of the crucial decisions with which the researcher is tasked is to select a specific paradigm for his or her research; this is the philosophical motivation or intent that drives him or her to conduct their research (Cohen et al., 2011). Guba (1990) provides a general definition of a paradigm, referring to it as a general set of beliefs and assumptions that ultimately influences an individual's inquiry and that he or she uses to understand and comprehend the world and worldview. Kuhn (1996, p.x) further defines paradigms as "universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners", while Bogdan and Biklen (1998, p.22) refer to it as "a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research". Neuman (2006, p.81) expounds this further, defining it to be "a general organizing framework for theory and research that includes basic assumptions, key issues, models of quality research, and methods for seeking answers".

Thus, the research paradigm has a considerable influence over the practical implementation and overall research (Cohen et al. 2011; Creswell, 2013), as the research design is dependent upon a number of philosophical positions that are held. The reason for this is because philosophical positions are composed of varying assumptions that can affect an individual's worldview (Saunders et al., 2009). Paradigms are made up of the following philosophical components: ontology, epistemology, methodology and methods (Guba 1990;

Scotland, 2012). Ontology, which refers to beliefs or accounts of the nature of reality, is defined by Crotty (1998, p.10) as "It is concerned with 'what is', with the nature of existence, with the structure of reality as such". This means ontological assumptions relate to what a person believes reality actually is and how things actually are. With regard to epistemology, Crotty (1998, p.3) further defines this as "the theory of knowledge embedded in the theoretical perspective and thereby in the methodology", while Wellington (2015, p.341) refers to it as "the study of the nature and validity of human knowledge". Thus, epistemology focuses on the nature and forms of knowledge and subsequently explores how knowledge is created, obtained and passed on to others (Cohen et al., 2011). Wellington (2015, p.343) also provides a definition for methodology which is "the study of the methods, design and procedures used in research".

By addressing these components, it ensures the research follows a logical or coherent progression when making subsequent choices for the methodology or overall research design. Moreover, as these paradigms focus on providing the rationale for the underpinning knowledge to conduct research, there are a number of theoretical paradigms that have been proposed and reviewed within the existing literature (Creswell & Plano Clark, 2011). Johnson and Duberley (2000) have generally classified these as positivism and interpretivism, while Cresswell (2013) has highlighted four key paradigms that are widely discussed in the research literature which are: postpositivism, constructivism, transformative and pragmatism. The following sub-sections provide a brief overview of these common paradigms.

3.2.1 Positivism

According to some philosophers and social scientists' views, the positivist approach to research is a scientific paradigm that is based on an objective analysis of empirical data through measurements (Crotty, 1998; Collis & Hussey, 2013; Creswell & Plano Clark, 2011).

That is, the researcher is detached from the data and relies upon statistical analysis, scientific methods and generalizable findings (Mack, 2010). Thus, the positivist approach ensures objectivity within the data which means the data are measured and stand alone on using natural and reliable objective measures (Oates, 2006) or, as stated by O'Leary (2004, p. 5), knowledge is measured "through observation and measurement in order to predict and control the forces that surround us". Thus, positivism is more commonly associated and implemented within a quantitative method of data collation and analysis.

In contextualising the potential use for positivism in this research, it does raise some pertinent questions. For instance, Mack (2010) highlights certain criticisms over this particular paradigm when attempting to apply it for research in social sciences. This is further supported by Scotland (2012) who states that, although positivism is able to simplify and control a number of variables within the data, this is difficult to achieve in educational research. This is because the scientific method is not always applicable, achievable or ethical when researching the complexity of human affairs. Additionally, Oates (2006, p.289) argues that "different people see their worlds differently and their views and perceptions can change over time". Mack (2010) further states that implementing positivism for social sciences can be quite problematic because the nature of social science comprises various perspectives and interpretations from individuals which causes theories to be quite complex. This is contrary to the positivist approach which seeks to measure data in as simplified and precise a manner as is achievable, particularly when there are a number of variables that can affect events and individuals' actions, making it unlikely to find absolute or simple truths within the data.

As a result of the above criticism, researchers sought to develop and form different paradigms such as interpretivist, transformative and pragmatic paradigms (Creswell & Plano Clark, 2011). This provided the foundation to evaluate data in relation to the interpretation of thoughts and concepts of any situation (Cohen et al., 2011). Thus, as this research aims to

identify factors that influence students' experience with the OCL environment, the implementation of positivism alone would limit the scope of the research.

3.2.2 Interpretivism

The interpretivism paradigm seeks to understand the social world by implying that "reality is socially constructed" (Mertens, 2015, p.16) and attempts to "identify, explore and explain how all the factors in a particular social setting are related and interdependent" (Oates, 2006, p.292). That is, data are constructed by gaining an insight into certain phenomena from the perspective of individuals which are communicated within a social context (Crotty, 1998; Creswell & Plano Clark, 2011). Subsequently, the social world is understood from the perspective of those who participate in it (Cohen et al., 2011), as opposed to depending upon precisely definable constructs and statistical data. This means that an interpretivist paradigm allows for subjective perspectives and is based on individual interpretations (Grix, 2004), and as Mack (2010, p.8) explains "social reality is seen by multiple people and these multiple people interpret events differently leaving multiple perspectives of an incident".

Furthermore, this approach refers specifically to how researchers analyse experiences, interpretations and contexts (Creswell, 2013), leading them to be more explicitly involved in the data. Consequently, this paradigm is more commonly associated with and implemented within a qualitative method of data analysis. Moreover, Oates (2006, p.293) states that, although this paradigm investigates "people in their natural social settings", it is important that the researcher considers multiple views that are found within this group. This is of particular value when considering the breadth of experiences in a social situation.

In contextualising this paradigm for this research, whilst it is evident that it will provide suitable data in understanding the students' experiences within the OCL environment, there are certain limitations that need to be addressed. That is, a highly important aspect of

this research is to acquire findings that provide as robust generalisations as possible which can then be considered for policy makers within KAU and other universities. However, due to the sample size and the subjective nature of the beliefs and opinions that are provided in the data of an interpretivist approach, it is difficult to be confident in an ability to generalise these findings (Scotland, 2012).

3.2.3 Transformative paradigm

Transformative paradigm was developed to address issues pertaining to social justice and marginalised individuals. It was formed as a result of various frustrations with the leading research paradigms that existed, as well as researchers recognising that the underlying psychological and sociological theories behind these existing paradigms were derived from a male perspective (Mertens, 2015).

While taking these paradigms into consideration, this study is neither exclusively objective nor subjective; rather it necessitates the implementation of both quantitative and qualitative approaches. This implies that a paradigm reflecting this approach should be adopted, ensuring further implications of this research relate directly within this framework. This is in line with what Creswell and Plano Clark (2007) and Tashakkori and Teddlie (2010) consider and advocate in terms of the use of the pragmatic paradigm as appropriate in justifying and implementing a mixed methods approach.

3.2.4 Pragmatic paradigm

According to researchers, the pragmatic paradigm (pragmatism) does not commit itself to any particular assumptions about the nature of reality or a specific system of philosophy (Morgan, 2007; Creswell & Plano Clark, 2011). Mertens (2015, p.35) argues that pragmatists "rejected the scientific notion that social science inquiry was able to access the truth about the real world solely by virtue of a single scientific method". Thus, pragmatism is regarded as a

paradigm that seeks to acquire knowledge or understanding by directing attention to the research outcomes and their utility as opposed to the use of inquiry to acquire abstract knowledge (Morgan, 2007). Hence, pragmatism offers the necessary philosophical framework for studies that adopts a mixed methods approach (Somekh & Lewin, 2005; Tashakkori & Teddlie, 2010). This is supported by Teddlie and Tashakkori (2009, p.99) who state it is "the best paradigm for justifying the use of mixed methods research". Teddlie and Johnson (2009, p.73) further describe the pragmatic paradigm as the 'philosophical partner' for mixed methods research because it "rejects the either-or choices from the constructivism-positivism debate".

Whilst some may argue that any paradigm could effectively be used within a mixed methods approach, Creswell (2013) illustrates why the pragmatic paradigm tends to be more suited. This is because 'the research problem' (i.e., research question) or research outcomes is a central focal point within this paradigm. Teddlie and Tashakkori (2003, p.21) expound this, stating, "pragmatist researchers consider the research question to be more important than either the method they use or the paradigm that underlies the method". Thus, in order to gain an insight into understanding the problem, researchers who conduct mixed methods research do not have any philosophical loyalty with a particular paradigm (Mackenzie & Knipe, 2006); on the contrary, they will be more inclined to use any data collection or methods for analysis, which are all regarded as being valid, provided they are able to comprehend and address the research question effectively, as opposed to focusing on predetermined ideas concerning research paradigms (Johnson & Onwuegbuzie, 2004).

Moreover, Ritchie (2003) highlights that both qualitative and quantitative methods can be applied simultaneously when exploring a particular phenomenon because there is often a need to analyse both a numerical and social nature within this phenomenon. Nevertheless, in adopting the pragmatic paradigm, certain issues have been identified.

Paradigm purists (i.e., those adopting interpretivism or positivism) would argue that by mixing paradigms, it may result in underestimating or overlooking the key principles that are found in each specific paradigm, causing mixed method research to be somewhat flawed (Greene et al., 1989). That is, the ontological and epistemological assumptions found in separate paradigms are genuine properties for social research and these are violated if pragmatism is adopted (Maxwell & Mittapalli, 2010).

Resulting from the analysis that has been undertaken of the various paradigms, this research seeks to adopt pragmatism as the underlying paradigm. This is because the primary focus of this research is to answer the research question, thus enabling any appropriate methodological approach to be utilised for this particular purpose (Tashakkori & Teddlie, 2010). Furthermore, it has been suggested that this approach provides a solid foundation for research that attempts to understand the experiences of students within an educational context (Teddlie & Tashakkori, 2003), which is the primary objective of this research.

3.3 Research Methodology

When conducting research within the field of social sciences, there are a number of techniques that can be implemented to explore, analyse and explain the issues (Bryman, 2012). In relation to this, Creswell and Plano Clark (2011) expound that it is necessary for researchers to select a methodology that will effectively answer their research questions. When defining the term 'methodology', researchers often refer to it as the procedures, techniques and strategies that are implemented in research in order to collect data and analyse it accordingly so that it is comprehensible (Denscombe, 2007; Creswell, 2013). Wellington (2015, p. 33) explains that a methodology is an active process, where the "activity or business of choosing, reflecting upon, evaluating and justifying the methods you use" subsequently

allows researchers to “describe and analyze these methods, throwing light on their limitation and resources, clarifying their presuppositions and consequences, relating their potentialities to the zone at the frontiers of knowledge” (Kaplan, 1973, cited in Wellington, 2015, p. 34).

As established in the previous section, this study adopts the pragmatic paradigm, and therefore, the following section seeks to explore which research methodology and method is more appropriate in line with this paradigm.

3.3.1 Quantitative research approach

Quantitative research is broadly defined as “entailing the collection of numerical data” (Bryman, 2012, p.160). Denscombe (2007) further explains the data obtained from this method have the characteristics of scientific responsibility, where numerical data are based on evidence (Oates 2006), and used to form graphs and tables. Wellington (2015, p.28) emphasised this stating “quantitative methods are not always theory-laden or hypothesis-driven, and certainly never (because they are employed by people) value-free”. In other words, the data that are conveyed aim to be objective and factual. In order to gather data from this method, researchers who adopt the quantitative methodology will first decide “what to study, asks specific, precise questions, collects quantifiable data from participants, analyses these numbers using agreed statistical techniques; and conducts the inquiry in as unbiased, and as objective a manner as possible” (Creswell, 2008, p.46).

By implementing a method that restricts the data to factual or objective evidence, the quantitative research methods have a significant number of strengths when applied to educational research (Bryman, 2012). Oates (2006) expounds some of the key advantages. For instance, due to the means by which it generates and analyses data, this method is appropriate for large-scale research, as the data can be expressed statistically and quantifiably. Moreover, in terms of analysis, this is based on techniques and tests of significance that are

well established. Furthermore, due to the fact that the data are measurable quantities, as opposed to subjective interpretations, the analysis of these data can be statistically tested and checked by others, ensuring that it maintains objectivity and precision. Although numerical data can arise from subjective criteria when participants are required to choose from a number of subjective points on a Likert scale, having a large number of participants involved in responding to the questionnaire can potentially reduce the effects of subjective imbalances. Lastly, quantitative research methods allow the researcher to generate charts and tables, this presents an effective and efficient method of summarising and communicating the findings of the research (Oates, 2006).

Nevertheless, even though these strengths are present, Oates (2006) also highlights some of the weaknesses within the quantitative methodology. For instance, when conducting any statistical test on the data, the researcher must first know what information they wish to obtain from the data and, from this, they must know which tests they will use for these data to be given. In addition, as this method focuses on numerical forms of data, it requires the researcher to provide initial values to the scales that will be used and an assessment of their reliability and validity.

3.3.2 Qualitative research approach

Denscombe (2007, p.333) explains that "qualitative data is an umbrella term that covers a variety of styles of social research, drawing on a variety of disciplines such as sociology, social anthropology and social psychology." Therefore, the qualitative research methods tend to focus on the opinions and experiences that are generated from the participants (Creswell, 2013), seeking to gain a deeper insight into how they form their perceptions and thoughts relating to the phenomenon that is being researched. This means that qualitative data are collected using non-numerical words or texts from the participants, where their experiences

are analysed thematically in order to provide their subjective viewpoint (Creswell, 2013; Oates, 2006). In light of this, Denscombe (2007) outlines several distinct features relating to qualitative research, these include the data being grounded in reality and, therefore, rooted in social existence. Moreover, as highlighted earlier, the data that are gathered from the participants are rich and detailed; this is because the participants are given the opportunity to provide a comprehensive and in-depth analysis of their experiences. However, there are certain limitations that have been outlined with regard to this methodology. For instance, Denscombe (2007) highlights that this method is time consuming and appropriate for small-scale samples, but that it is difficult to manage large data-sets and it is not usually possible to generalize the results. Thus, in contextualising the use of these two methods for the purpose of this study:

> A mixed methods design is useful when the quantitative or qualitative approach, each by itself, is inadequate to best understand a research problem and the strengths of both quantitative and qualitative research (and its data) can provide the best understanding. For example, a researcher may want to both generalize the findings to a population as well as develop a detailed view of the meaning of a phenomenon or concept for individuals (Creswell, 2013, p.20).

It is evident that each of these methods on their own could help to answer certain aspects of the research question. For instance, one of the guiding principles that Wellington (2015) highlights in quantitative methods is to search for generalisation. Thus, as the objective of this study is to identify the factors influencing the effective use of the OCL environment by Saudi male undergraduate distant learners, the use of a quantitative method is effective in allowing the researcher to gather a large sample for analysis and to seek to generalise the results. However, a further significant aspect of this study is to explain an in-depth analysis of the experiences that Saudi students have with the OCL setting; this requires insight into their experiences. In this aspect, the qualitative methodology is highly appropriate in extracting this type of data; therefore, it is evident that an amalgamation of both quantitative and

qualitative methods would be appropriate in answering the research questions comprehensively and completely.

3.3.3 Mixed-methods research approach

The use of mixed methods enables researchers to consider various perspectives within a study which is vital in order to 'triangulate' the data and form conclusions pertaining to a particular phenomenon. Creswell and Plano Clark (2007 p. 5) define mixed methods research as:

> A research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis and the mixture of qualitative and quantitative approaches in many phases of the research process.

Johnson and Onwuegbuzie (2004, p. 17) further define it as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study". Moreover, although this approach has emerged under the notion that both quantitative and qualitative methods are advantageous in answering the research question, Johnson et al. (2007, p. 113) explain that mixed methods may be seen as a "new movement, or discourse, or research paradigm that has arisen in response to the currents of quantitative research and qualitative research".

Thus, in light of the aforementioned definitions, the objective behind this approach is not to use it as a replacement for either quantitative or qualitative methods; on the contrary, the purpose is to draw upon the strengths of both approaches in order to generate key findings within a research problem (Johnson & Onwuegbuzie, 2004). The focus is on the collection and analysis of the data, both from quantitative and qualitative sources under the premise that they can provide a greater comprehension of the research problem in comparison to either approach implemented in isolation (Tashakkori & Teddlie 2010; Creswell 2013). Thus,

Bryman (2007, p.9) aptly states that "bringing quantitative and qualitative findings together has the potential to offer insights that could not otherwise be gleaned". Tashakkori and Teddlie (2010) further advocate its use, as they argue this adoption and amalgamation of both methods is common and, in certain cases, more suitable. Subsequently, it has been noted that this methodology is gaining popularity within research studies (Creswell, 2013), while others have argued that it has firmly become an established methodology and a valid contender to the positivist and interpretivist research approaches (Johnson et al., 2007). Nevertheless, it should be noted that this is only achievable if the research design has been considered extensively and that the method is implemented strictly and appropriately (O'Cathain et al., 2007).

Conversely, some researchers have argued over the mixed methods approach and do not regard it as a viable approach. For instance, Smith (1983, p.12) states that a mixture of the two separate research methodologies uses "different procedures and has different epistemological implications" and, therefore, it overlooks the differences that are found in the underlying paradigms for each approach (Smith & Heshusius, 1986). This would imply that each paradigm should use suitable techniques within their relevant assumptions. Thus, if the two paradigms are ultimately contradictory, Smith and Heshusius (1986, p. 4) assert that "the claim of compatibility, let alone one of synthesis, cannot be sustained".

That said, there are others who have supported the use of this approach. Howe (1988, p.10), for instance, believes that this combination is a "good thing", and rejects the claim that "such a wedding of methods is epistemologically incoherent". He further opposes the incompatibility issue proposed by Smith (1983), which suggests, because the "positivist and interpretivist paradigms underlie quantitative and qualitative methods, respectively; the two kinds of paradigms are incompatible; therefore, the two kinds of methods are incompatible". This, according to Johnson and Onwuegbuzie (2004, p.15), is simply not the case, as they

argue “the logic of justification (an important aspect of epistemology) does not dictate what specific data collection and data analytical methods researchers must use”. Other researchers have also disputed that there is a dichotomy between the two approaches (Newman & Benz, 1998; Onwuegbuzie & Leech, 2005), wherein the argument is that quantitative techniques are solely from a positivist paradigm or that qualitative techniques can only be derived from an interpretivist paradigm (Onwuegbuzie & Leech, 2005).

Furthermore, the argument put forth by Creswell and Plano Clark (2007) continues to echo the sentiments made by previous researchers such as Johnson and Onwuegbuzie (2004), in that the strengths that are found in each approach can be appropriately adopted for the benefit of the study and in gaining a better insight into social phenomena. Thus, this concept of dualism, which sees qualitative and quantitative methods as distinct and opposing worldviews, is rejected within mixed methods (Xie, 2005).

This highlights certain concerns when adopting the mixed methods approach whereby, if it is implemented ad hoc, it can compromise the validity of the data (Morse, 1991). Moreover, one must apply caution if there is an attempt to adhere to both qualitative and quantitative techniques in one study, as this may be highly problematic. Tashakkori and Teddlie (2010) and Bryman (2012) refer to this as ‘paradigm incompatibility’ which is where the differences between the two methods are too distinct for them to be combined.

In light of this discussion, there are researchers who assert that the two approaches can be mixed in such a manner that it does not contravene their philosophical assumptions. Some have disregarded the need for having a paradigm, such as Gorard (2010, p.247) who states that “mixed methods, in the sense of having a variety of tools in the toolbox and using them as appropriate, is the only sensible way to approach research . . . without the need to create a new paradigm”, whereas others have adopted pragmatism as their alternative philosophical basis. As stated earlier, pragmatism focuses on answering the research question,

regardless of the method or means to achieve this, as opposed to having the research method as the primary focus, which is what is implied within the qualitative and quantitative approaches (Morgan, 2007).

In the context of this study, Creswell (2013) suggests that due to the complex and extensive nature that is often found within such an environment, it justifies the implementation of a mixed methods approach. He argues that the need for a greater understanding and detailed account of this environment can be achieved by using both qualitative and quantitative techniques. Furthermore, in relation to studies that are conducted online, Norris (2001, p.36) asserts that "No single methodology can hope to capture the rich complexities of life on the Internet". The rationale behind this is that, through the combination of quantitative and qualitative methods, the type of data that are obtained are able to provide deeper insight into a particular problem, situation or phenomena (Creswell, 2013). This is more so the case for instances where one method on its own is insufficient in achieving this. Thus, there is a complementary nature in utilising both methods, where they enable the researcher to take advantage of the strengths that are found in each approach which can subsequently lead to far more robust data analysis (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2010).

Furthermore, Cohen et al. (2011) propose the promotion of triangulation as a significant reason to adopt mixed methods research; Creswell (2013) further highlights how effective it can be when implemented within the different stages of the research process. For instance, during the research design, Creswell (2013) explains that the quantitative data can be used in support of the qualitative data by helping to identify the sample members, whereas the qualitative data can help with the conceptual data found in the quantitative data. Moreover, during the data collection stage, the qualitative data can be used to support the data collection process, while the quantitative data can be used as a baseline in avoiding 'elite

bias'. Lastly, for the analysis stage, the qualitative data can be instrumental in helping to interpret, clarify and validate the results that were obtained in the quantitative date, whereas the quantitative data can be used to help in assessing the generalizability of the qualitative data (Sechrest & Sidana, 1995; Collins et al., 2006). Within the data analysis stage, the use of qualitative data can play a pivotal role in helping to clarify, interpret, understand and validate the quantitative data (Johnson et al., 2007). Guba and Lincoln (2005, p. 200) advocate the use of a mixed methods approach, stating that "within each paradigm, mixed methodologies (strategies) may make perfectly good sense". Research into social sciences has seen a recent increase in the implementation of mixed methods designs (Creswell, 2013).

3.3.3.1 *Research designs (Sequential Explanatory Design)*

In applying the mixed methods approach to a study, Creswell (2013) outlines two distinct research designs that can be used to explain how qualitative and quantitative data are collected. These are referred to as the convergent design and the sequential design. The convergent design seeks to collect qualitative and quantitative data in parallel with one another, so both forms of data are extracted at the same time; from this, the data are then combined and the overall results are interpreted accordingly (Tashakkori & Teddlie, 2010; Creswell, 2013).

Conversely, the sequential design is implemented in two distinct phases whereby one method for data collection is first conducted, and then the other method is used to build upon it (Bergman, 2008; Creswell et al., 2003). For instance, the researcher may use a quantitative data collection approach first, and then develop these results further by implementing the subsequent qualitative data collection approach (or vice versa). Creswell and Plano Clark (2007) explain that this design is valuable when researchers wish to initially acquire one form of data (qualitative or quantitative) which can be used to inform the subsequent data. If the

researcher chooses to apply the sequential design, there are various combinations that can be applied which will influence the reasons for adopting the mixed methods approach (i.e., triangulation, deeper analysis and new lines of thinking). This can also lead to different approaches in relation to the data which means researchers should decide which of the research methods is given priority and greater emphasis, as well as defining which of them is integrated or combined into the initial data collection (Creswell et al., 2003). For example, focus group interviews that are used in the qualitative data can be used by the researcher to obtain an understanding of the nature of certain experiences of the participants. In the context of this study, this can provide insight into the students' experiences of the OCL environment and practice.

As this research seeks to identify factors influencing the undergraduate distance Saudi students' experiences with the OCL setting, a mixed methods sequential design has been adopted. Within this design, Creswell et al. (2003) further highlight several types of mixtures of sequential design which are referred to as explanatory and exploratory. In addition, Creswell (2013, p.20) states that:

> Researchers may first survey a large number of individuals and then follow up with a few participants to obtain their specific views and their voices about the topic. In these situations, collecting both closed-ended quantitative data and open-ended qualitative data proves advantageous.

There are however, certain methodological factors that should be considered by the researcher when attempting to implement a mixed methods sequential explanatory design. This includes evaluating how much priority or emphasis is given to either the quantitative or qualitative data (both in terms of the actual collection, analysis and the sequence for this), as well as determining what stage(s) during the research process will be identified as the point

where the results from both methods are connected and integrated (Morgan, 2007; Creswell et al., 2003).

Taking these criteria into consideration, the researcher has opted to implement a mixed methods sequential explanatory design, which refers to collating and analysing quantitative data first, and subsequently the qualitative data, in 'two distinct interactive phases'. This enables the researcher to present the opinions that were given by a large group of participants (Creswell et al., 2003 ; Punch, 2009; Tashakkori & Teddlie, 2010; Creswell, 2013), and may allow the results to be generalised. Furthermore, with regard to the two phases, the former phase is given priority to answer the research question, while the latter phase is used to help explain the initial quantitative phase. For instance, this study will initially collect and analyse quantitative data from student questionnaires to determine which of the factors influenced their experience with the OCL setting; following this, collection and analysis of the qualitative data from focus group interviews provide a deeper insight and explanation of why these factors were significant.

One may therefore conclude that a mixed methods approach has the potential to generate results that are extensive, both in scope and quality. In this study, this approach may extend the results, analysis and conclusions found within this study, which in turn provides a more detailed insight and explanation of the factors that influence the undergraduate distance Saudi students' experience with the OCL environment.

3.4 Study instruments

The choice of research study instruments is determined by the research methodology (Cohen et al., 2011). In light of the discussions pertaining to the selected research methods for this study, the application of questionnaires and focus group interviews were selected and deemed

as appropriate methods to collect relevant information and data. This section aims to provide a thorough insight into these two tools.

3.4.1 The questionnaire

Johnson and Christensen (2004, p.164) define questionnaires as a self-reporting data collection tool that enables researchers to "gather information about the thoughts, feelings, attitudes, beliefs, values, perceptions, personality, and behavioural intentions of research participants". This is supported by Oppenheim (2005) and Radhakrishna (2007) who imply that this method is frequently used for data collection in educational research. Thus, there are a number of key advantages and characteristics for why questionnaires are regarded as a popular means of collecting data. One such reason is because they are seen as an efficient approach to collect considerable data from a wide range of participants in a relatively short period of time (Creswell, 2013; Teddlie & Tashakkori, 2009). This is beneficial for the study as it means the researcher has a better insight of who their participants are, as well as gaining a deeper understanding of their views.

In addition, from the participants' perspective, this is also a benefit as they have more time to think about the answers they give, in comparison to other approaches such as an interview, which requires prompt answers throughout. Moreover, questionnaires have the ability to reduce bias and can also maintain the anonymity of participants, encouraging them to be more open and truthful in their responses (Gillham, 2000; Wilkinson & Birmingham, 2003). Additionally, Johnson and Christensen (2008, p. 17) explain that there is a degree of flexibility in the application of questionnaires, whereby "questionnaires are not restricted to a single research method"; rather, they can be applied within a mixed methods design by enabling participants to report their own beliefs, perceptions, experiences and opinions of a given subject matter.

Despite these strengths, there are a number of issues that should be considered. Bryman (2012) explains that preparing questionnaires for data collection requires a great deal of accuracy and skill in order to ensure that there is no misunderstandings or misleading cues within the content. Additionally, although the lack of involvement from the researcher can be seen as a positive factor when participants complete questionnaires, it can also be regarded as a disadvantage. In such cases, the researcher is reliant upon the participant, as there is no guarantee that they will complete the questionnaire correctly, or even understand the procedures for the questionnaire completion, particularly if the instructions and formulation of the questions are phrased inappropriately. To resolve these issues, Tashakkori and Teddlie (2010) provide a few suggestions, such as keeping the questions as objective as possible, without attempting to use 'loaded' or 'leading' questions, to formulate the questions using simple and clear language with which people are generally familiar, and also to ensure that the questionnaire undergoes a pilot-test. The next section outlines the procedures and strategies of how the questionnaires were formulated.

3.4.1.1 *Questionnaire design and construction*

The construction of the questionnaire for this research was based on the existing related literature (i.e., O'Neill et al., 2011; Palloff & Pratt, 2005/2007). Thus, some of the more common themes and best practice that emerge throughout the literature is in relation to the wording and length of the questions (deLeeuw & deHeer, 2002), whereby they should be kept succinct and use general terms (Dillman, 2000; Fink, 2003). As a result, complex questions should be broken down into simpler questions (Jobe & Mingay, 1989) and words that are regarded as quite vague (i.e., "probably", "perhaps") should be avoided. Another aspect of best practice in the construction of questionnaires is to evaluate the word order so that there is no negative impact from the perspective of the participant (deLeeuw & deHeer,

2002). Rodgers et al. (1992) elaborate upon this by suggesting that all the questions that are related to a similar topic should be grouped together, which can in turn, result in enhancing the quality of the data.

Once the content structure and design of the questionnaire are finalised, there are other aspects for the construction of the questionnaire that require consideration. One area is to decide how the questionnaires will be distributed to the participants, particularly if this is to target a large audience. For this study, an online questionnaire was devised using Google Docs which is part of a free online software package developed by Google for the purpose of word processing, presentations and generating questionnaires.

There are a number of advantages to using an online method to design and distribute questionnaires, such as low cost, less time and greater convenience for the participant (Bryman, 2012). In terms of cost for online questionnaires, this is minimal as there is no need to print any questionnaires. Additionally, due to online questionnaires being completed in real-time, the data are automatically and electronically stored, which means there is also less time required. This in turn makes it easy and more convenient for the participants, as they can answer the questions at their own pace and convenience. All the target sample will need is access to the questionnaire, which can be provided in an invitation link via email. Lastly, by designing an online questionnaire, the facilities allow the researcher to restrict how the questions are answered (i.e., respondents can only give one response in a multiple-choice question). This is beneficial as it ensures that there are no errors or missing data during the completion and submission of the questionnaire. It is important to note that online questionnaires may not suit every situation. For instance, those who have limited or no Internet access may not be able to respond and this in turn could marginalise them from the target sample. Furthermore, the automated component of an online questionnaire enables researchers to transfer the data to and visualise the results in simple charts or graphs.

Upon continuous refinement of the questionnaire for this study, a final version was constructed .This was comprised of five parts, with each part consisting of a number of items. The first part focuses on the demographic information of the respondents, asking them for details concerning their type of enrolment, age, ICT skills, their previous experience with the OCL environment, any LMS training at university and their perception of the current situation of using the OCL environment in KAU. These data are vital as they give an overview and description of the target sample, and they could also be used to control the other dimensions of the study.

The remaining four sections focus on factors relating to the students' experience of using the OCL environment. Each section adheres to a similar structure, where the first part within each section comprises statements that require a Likert-type response. A 5-point Likert scale, which is regarded as one of the most commonly used response option scales (Brace 2008; Dillman 2000; Mayer 2012; Fink 2003), was used to ascertain what the respondents' level of agreement or disagreement was for each statement (Bryman & Cramer, 2002). Following this, the students were given the opportunity to expand upon their answers by providing any other comments or opinions that they wished to express on each related issue.

The first of these four sections focuses on technology-related factors and seeks to gain the participants' experiences of the following six areas: the availability of computers, adequate Internet speed, compatibility of the LMS with devices, the easiness of LMS, and LMS features. The second of these four sections addresses the factors of the students' characteristics, which are: awareness, willingness, previous experience in ICT, OCL environment enhancement of ICT skills, other responsibilities, resistance to change, shortcomings in collaborative skills, lack of knowledge, fear of criticism, from peers and training and guidance. The third of these four sections examines the students' perceptions of the tutor's role and consists of the following items: the tutor's attitude towards the OCL

environment, clear and appropriate objectives, adequate and appropriate support and guidance, the tutor's monitoring and facilitation of the OCL environment, lecturer encouragement, the tutor's motivation to contribute, the tutor cultivating a warm and friendly environment, the tutor's ICT skills and competency, and tutor feedback. Lastly, the final section of the questionnaire asks the students to provide their experience with regard to the course characteristics. The items that are covered here are: the organisation and structure of the task, distribution of tasks and individual accountability, group sizes, knowing the group members, the heterogeneity within a group and assessment.

An introduction was also included in the questionnaire. This provided the participants with information concerning the study: the aims and objectives of the study, instructions on how to complete the questionnaire and contact details should they require any further information or have any questions. The participants were also informed of their rights within this study including anonymity and that they could withdraw at any time. Once the participants submitted the questionnaire, a message to thank them for their input and acknowledgement of its value was given.

3.4.1.2 *Translation of the instrument (questionnaire)*

As the questionnaire was intended for participants whose first language is Arabic, it was imperative to ensure that an accurate translation was achieved. Kapborg and Bertero (2002, p. 54) state that "translating from one language to another can be very complex because of subtle differences in meaning". Hofstede (2001) further emphasises that translators should have a level of familiarity with the target culture and language. Thus, as the researcher had a sufficient grasp of both languages and an understanding of both cultures, the questionnaire was first written in English and then translated into Arabic by the researcher.

A dedicated amount of time and effort was made to ensure that any concepts were translated correctly and that the meaning was not lost during this translation. To achieve this, a strategy was applied to not carry out a word-by-word translation of the questionnaire as this may cause problems in terms of what is meant by the actual statement itself. Once the questionnaire was translated and finalised into the Arabic language, recommendations and feedback were taken into consideration, including rewording sentences for greater clarity and addressing punctuation errors. These recommendations and feedback were taken from the researcher's supervisor and peer students within the School of Education at Durham University. Therefore, prior to the completion of the final version, the questionnaire was distributed amongst the researcher's supervisor and peer students within the School of Education at Durham University for the purpose of gaining constructive feedback. Their feedback led to certain statements being modified. Following this, the researcher translated the questionnaire into Arabic and this was again distributed amongst students within the School of Modern Languages and Cultures in the Department of Arabic at Durham University. The students within this department were fluent in both languages and were therefore able to evaluate the clarity of the sentences in the Arabic questionnaire. Furthermore, the content of both versions of the questionnaires were validated by four Saudi doctoral students, one of whom was based in the field of educational technology and possessed a competent understanding of both English and Arabic. A comparison of both questionnaires was made to ensure that both questionnaires conveyed the same meaning and, based on their feedback, certain statements were altered.

3.4.1.3 *Piloting the instrument (questionnaire)*

Prior to conducting the main study, it is also imperative that a pilot study is carried out during the planning stages (Connelly, 2008). Van Teijlingen and Hundley (2001) add that, although

a pilot study cannot guarantee that the main study will be successful, it can increase its likelihood. Cohen et al. (2011) highlight that the pilot study can aid in improving the main study, particularly with regard to the data instrument. In the context of this research, piloting the questionnaire ensured that the overall content (instructions and question items) was clear and unambiguous and, particularly with regard to the question items, it was important to review whether their complexity and length were suitable for the intended participants or if they needed to be deleted or rephrased. Moreover, the pilot study sought to establish whether or not the results that were generated from the questionnaire were constructively valid and internally reliable.

Additionally, one of the key aspects of the piloting in this study was to review the administration and distribution procedures of the questionnaires. This included how many and how quickly participants responded, which would subsequently help in ascertaining whether or not the students would be comfortable with completing an online questionnaire or whether they would require it in paper format. This was a concern, as collating data online in this manner is a relatively new approach, and much of the target sample is unaccustomed to completing these types of questionnaires online. However, in the pilot study out of the 235 questionnaires that were sent, the researcher received 107, which was relatively higher than the number expected. This indicated that the online questionnaire was a viable method to ensure a good return. It should be noted that the participants in the pilot study were not included in the actual study. Analysis of the pilot study revealed that there were a number of items that were measured by Cronbach's coefficient scale and were subsequently modified in the final questionnaire. The pilot study also enables the researcher to validate items from his or her questionnaire and to ensure that each item represents its relevant dependent variable (Creswell, 2005; van Teijlingen & Hundley, 2001). Because the questionnaire was first written in English and then translated into Arabic, it was important to conduct a pilot study

for the purposes of validation and for valuable feedback on the items of the Arabic questionnaire.

3.4.1.4 ***Validation of the instrument (questionnaire)***

Within any research, testing the validity and reliability of the data collection instruments is vital (Mertens, 2015; Johnson & Christensen, 2008; Bryman, 2012). By validating the data instrument, it ensures that the instrument will measure what it is specifically intended to measure. In turn, by testing the reliability of the data instrument, it determines whether the instrument will generate similar data under the same conditions if it is repeated again (Mertens, 2015). The following sections provide a detailed discussion on the reliability and validity of this research.

3.4.1.4.1 Reliability

Reliability is defined by Wellington (2015, p.43) as "the extent to which a test, a method or a tool gives consistent results across a range of settings, and if used by a range of researchers". This addresses the capacity and repeatability for the measurement of data collection instruments, which should be able to generate similar results if the test is repeated under similar conditions (Sarantakos, 2013). This is an important concept within quantitative methods, as if the data instrument is not repeatable, it means the data can be affected (Graziano & Raulin, 2007). Within social science, there are a number of prominent elements that should be considered. These include stability which ascertains whether a data instrument is constant over time. This is measured by test-retest reliability which is where the same data instrument is repeated under similar conditions at different times, and if the results from the study are consistent with one another, it indicates a high level of reliability (Oppenheim,

2005; Bryman, 2012; Sarantakos, 2013). There is, however, an issue that may arise from this which is referred to as the retesting effect.

In addition, the internal consistency of the research data instrument should also be analysed. This is defined as the consistency that a research measure has within itself (Hammond, 2006) and where various instrument items within a data tool attempt to measure the same construct, which are compared to see if they produce similar results. Thus, in order to access the internal consistency of a data tool, the Cronbach's coefficient scale (Cronbach, 1951; Stangor, 2007) is applied. While researchers concur that if the value of alpha is >0.70, the internal reliability is acceptable (Bryman, 2012; Pallant, 2013). Hinton et al. (2004) further explain that within this scale, there are certain points that describe the reliability scores in greater detail and imply just how reliable the items are. These are as follows:

- 0.90 and above – excellent reliability
- 0.70-0.90 - high reliability
- 0.50-0.70 - moderate reliability.

With regard to the questionnaire that is implemented in this study, internal consistency was tested using Cronbach's coefficient scale. In the pilot study, the internal reliability of the questionnaire (see Appendices C) was 0.939 for the technology-related factor, 0.805 for students' characteristics, 0.836 for tutors' role and 0.942 for course characteristics. Taking Hinton et al.'s (2004) criteria into consideration, each of these are regarded as having high consistency with an overall average alpha-value of 0.846

3.4.1.4.2 Validity

Validity is defined by Wellington (2015, p. 41) as the "degree to which a method, a test or a research tool actually measures what it is supposed to measure." That is, validity seeks to analyse the precision, accuracy and relevancy of an instrument that is used to measure whatever is being measured in the study, and to also determine whether this is accurate

(Oppenheim, 2005; Bryman, 2012; Sarantakos, 2013). This is achieved by basing validity on "a judgment of the degree to which the items, tasks, or questions on a test adequately represent the construct domain of interest" (Johnson & Christensen, 2008, p. 152).

There are different types of validity, such as face, construct, content and criterion-related validity. For this study, face, content and construct validity were implemented. For face and content validity, many researchers explain that this can be achieved through peer review which is where researchers will show the data tool to someone with more experience and expertise in that given area (Litwin, 2003; Gay & Airasian, 1996; Bryman, 2012). In the context of this study, prior to the completion of the final version, the questionnaire was distributed amongst the researcher's supervisor and peer students within the School of Education at Durham University for the purpose of gaining constructive feedback. Their feedback led to certain statements being modified. Following this, the researcher translated the questionnaire into Arabic and this was again distributed amongst students within the School of Modern Languages and Cultures in the Department of Arabic at Durham University. The students within this department were fluent in both languages and were therefore able to evaluate the clarity of the sentences in the Arabic questionnaire. Furthermore, the content of both versions of the questionnaires were validated by four Saudi doctoral students, one of whom was based in the field of educational technology and possessed a competent understanding of both English and Arabic. A comparison of both questionnaires was made to ensure that both questionnaires conveyed the same meaning and, based on their feedback, certain statements were altered.

With regard to construct validity, this is defined by Stangor (2007, p. 92) as "the extent to which a measured variable actually measures the conceptual variable that it is designed to assess". This can be measured by determining the factorial validity of the constructs (Westen & Rosenthal, 2003). Factorial validity is where convergent and

discriminant validity is examined through the use of factors (Straub et al., 2004). In principle, a factor analysis is first conducted and the convergent and discriminant validity are then determined by assessing the factor loadings of the items. This is achieved by observing whether the items or indicators are loaded cleanly together (i.e., convergence) or not (discriminant).

Factor analysis

Factor analysis is a set of multivariate statistical methods in which the main objective is to identify the underlying structure that is found within a particular variable (or variables) that is being analysed (Hair et al., 2006). This is therefore used to determine whether or not there are any correlations between certain sets of items or variables; this is achieved by identifying their common underlying dimensions; these dimensions are referred to as factors (Straub, 1989; Hair et al., 2006). Miettunen (2004, p. 21) defines factors as an "undimensional construct or dimension within a data set which is characterised by the variables of which it is comprised".

Within factor analysis, there are two main approaches that are established within the existing literature: exploratory and confirmatory (Pallant, 2013). Exploratory factor analysis has been extensively applied as a statistical method within social science (Costello & Osborne, 2005). It is normally conducted during the early stages of research in order to examine the interrelationships that are formed between sets of variables (Pallant, 2013). With reference to confirmatory factor analysis, this is conducted during the advanced stages of research and is regarded as a more complex method that seeks to test and confirm certain theories or hypotheses (Tabachnick & Fidell, 2007; Kinnear & Gray, 2009).

Exploratory factor analysis was implemented within this study as a means of further refining the construction of the questionnaire. According to Kinnear and Gray (2009), this approach involves three key stages. In identifying potential pairs of variables, a matrix of correlation

coefficients is first generated. From this, the factors are extracted and then rotated to help the researcher interpret the results. It should, however, be noted that prior to conducting factor analysis, it is vital that the suitability of the data set is first assessed (Pallant, 2013). This refers to measuring the sample size and assessing the strength of the relationships between the questionnaire items or variables (Pallant, 2013). Two statistical tests in SPSS have been identified to address these issues: Bartlett's test of Sphericity, which tests the significance of the correlations within the correlation matrix, and the Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy which is used to measure the adequacy of the sample (Pallant, 2013; Hair et al., 2006). Bartlett's test uses a p-value and for the factor analysis to be considered appropriate, the p-value should be significant, which is <0.05. Additionally, the range used for the KMO index is 0 to 1, where a value with a minimum of 0.6 is regarded as good for factor analysis (Pallant, 2013).

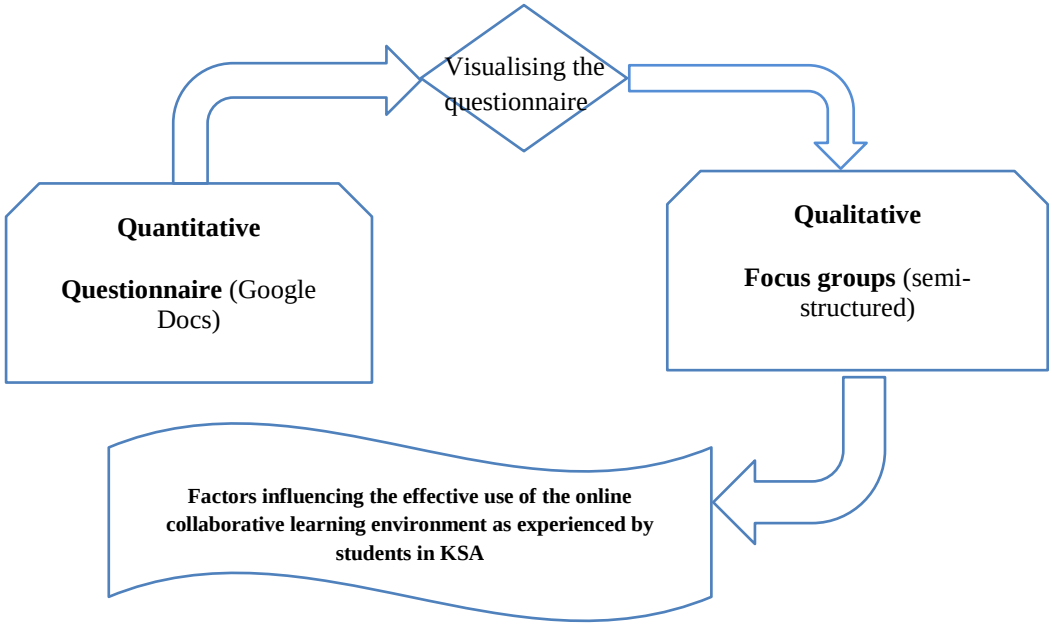
When the data have been deemed suitable for factor analysis, a key component within this subsequent analysis is to select a method to extract the factors from the actual data. This process is referred to as factor extraction and seeks to identify unique factors within the data. Although there are a variety of extraction methods, Principle Component Analysis (PCA) was applied in the pilot study. Once the extraction method was selected, the following stage was to determine which of the factors should be retained. In light of this, Pallant (2013, p.191) states "there are a number of techniques that can be used to assist in the decision concerning the number of factors to retain: Kaiser's criterion; scree test; and parallel analysis".

For this study, Kaiser's criterion (also referred to as the eigenvalue rule) was implemented. This method is commonly used in research and in the implementation of this rule; it states that any factor with an eigenvalue of 1.0 is to be retained (Pallant, 2013).

3.5 Data collection and analysis

As detailed within the data collection process, Figure 3.1 shows two key stages were outlined. The first phase was the collection of the quantitative data which was achieved through the distribution of the questionnaire. As the questionnaire adopted a web survey using Google Docs, upon collection of these data, the facilities within Google Docs allowed the researcher to analyse the data using basic graphical visuals (i.e., charts and graphs). This information was used as a basis for the next key stage in the study which was the collection of qualitative data through focus group interviews. The focus group interviews allowed a greater in-depth understanding of the participants' opinions from the questionnaires, thereby enabling them to provide further elaboration on the quantitative data and provide more meaningful results.

Figure 3.1 Data collection stages



The strategy that is used within data analysis not only comprises selecting relevant statistical analysis tests, but also includes how the data are initially handled, such as coding and cleaning the raw data (Pallant, 2013). With regard to the coding process, this begins by defining and labelling the variables. The data are then transferred into a statistical package (SPSS, version 21), which is then screened to make sure the scores were not entered incorrectly and, thus, ensuring accuracy of the data. To achieve this, the data were checked by using frequencies, maximum and minimum scores and means, which enabled the researcher to determine whether any scores fell outside the allocated values for each variable, or to determine whether there were any missing data.

Once the data are transferred accurately into SPSS, selecting a statistical test that is suitable is dependent upon the research question, as well as the overall nature of the study (Pallant, 2013). For this study, descriptive and inferential statistics were implemented. Argyrous (2005, p. 14) defines descriptive statistics as "the numerical, graphical, and tabular techniques for organising, analysing, and presenting data". Using this technique is advantageous in research, as it is able to take a large data set and transform it into data that are succinct and easier to read. Examples of this within research include the measure of central tendencies (i.e., as means), measure of dispersion or the standard deviation and frequency distribution. With regard to inferential statistics, Argyrous (2005, p. 204) defines this as "the numerical techniques for making conclusions about a population based on the information obtained from a random sample drawn from that population". In terms of its application in research, this includes examples such as a t-test and ANOVA. However, in order to conduct statistical tests effectively, it is necessary for specific assumptions within the data to be checked (Field, 2013).

3.5.1 Assumptions of statistical analyses

Assessing the normality of data is a vital condition found in many statistical tests because identifying data as being normal or non-normal is an underlying assumption to specify the use of parametric or nonparametric testing (Field, 2013, Pallant, 2013).

Evaluating the normality assumption can therefore be achieved by examining the distribution of data through histograms (Hill et al., 2006). After analysing the histograms, it showed that the distributions of the data were predominantly normal. Nevertheless, researchers suggest that one should not be overly concerned with the normality assumption if the sample size is large (Hill et al., 2006), as Pallant (2013, p.214) states "with large enough sample size (e.g. 30+), the violation of this assumption should not cause any major problems". Subsequently, the mean was calculated to measure the range of data distributions. Table 3.1 outlines the scale ranking that was used, which was a 5-point Likert scale. This scale range was calculated using the formula (x= (n-1)/n), resulting in a x=0.8 range for each category. This equation was adopted by Topkaya (2010) and Birisci et al. (2009) for similar purposes to this study.

Table 3.1 Scale ranking

Point Likert scale	Lower range	Higher range
Strongly disagree	1	1.80
Disagree	1.81	2.60
Neutral	2.61	3.40
Agree	3.41	4.20
Strongly agree	4.21	5

3.5.2 Focus group interview

Focus group interviews are defined by Morgan (1988, p.9) as:

> A form of a group interview, though not in the sense of a backwards and forwards between interviewer and group, rather, the reliance is on the interaction within the group who discuss a topic supplied by the researcher.

The focus group is often comprised of several individuals who all share common characteristics, and within this group, a discussion can be generated on a particular topic, upon which views or opinions can be shared (Bryman, 2012; Wellington, 2015). This data collection method has been used for a number of different purposes, including a means of gaining further insight into understanding quantitative data (Larson et al., 2004). Furthermore, focus groups are a valuable approach to help generate meaningful discussion and enriching the data at a minimal cost, they are a means of collating data on individuals' experiences, attitudes, ideas and values regarding a desired subject matter, as well as providing a platform for individuals to articulate themselves in their own words in an environment that encourages them to speak freely and discuss with others (Larson et al., 2004; Cohen et al., 2011; Kamberelis & Dimitriadis, 2013).

In light of this, one may identify certain characteristics of a focus group interview. For instance, focus groups are primarily verbal interactions between participants which enable them to freely articulate themselves in answering certain questions. Moreover, the foundation for an effective focus group interview is in the implementation of certain steps and procedures that facilitate and govern how a focus group interview should be conducted (Wellington, 2015). In doing so, the interviewer is able to facilitate a discussion that is designed to fulfil particular goals or objectives pertaining to the nature of the study, or to address certain aspects of the study that are under investigation. In other words, just like any other data collection tool, the focus group interviews have specific goals and seek to provide answers to the questions set by the researcher. Another valuable asset to using focus group interviews is that they can be implemented to analyse, confirm, validate or even triangulate the research question (Robson, 2011). Cohen et al. (2011, p.195) define triangulation as "the

use of two or more methods of data collection in the study of some aspect of human behaviour". In light of this definition, one may consider the focus group interviews as being a means of triangulating the results from the other data that are collated.

By only implementing one method of data collection within the study, it is likely that this may not provide a robust answer in identifying the students' experiences with the OCL environment. For instance, using questionnaires on their own would provide only a little of the participants' true account. In addition, Pring (2015) points out that "Surveys which tot up similar responses to the same question might in fact give a much distorted picture of how the different people really felt about or understood a situation" (p.70). Thus, in order to resolve such limitations to a study, utilising focus group interviews has been considered as it allows deeper insight into participants' views. That said, it must be noted that solely using such interviews will also not give a full picture. Pring (2015, p.50) adds that "Given the claimed uniqueness of each individual's understanding of an event or an activity, it would seem impossible for the interviewer to grasp the significance of what is said". One may therefore assert that this is a justification for adopting a mixed methods approach. The use of a mixed-methods approach is emphasised by Cohen et al. (2011), whereby triangulation is a key element to this approach and thus, by using both qualitative and quantitative data, it has the potential to offer richer and more complex results in relation to studies on human behaviours.

Within this study, the use of a questionnaire and focus group interviews were applied to explore the students' experience with the collaborative approach within an online environment. This contributed towards a number of key benefits for this study. For instance, the questionnaire was a suitable foundation as it provided the overall views of the participants, and by the answers from the questionnaire as a basis, the focus group interviews were subsequently implemented and which provided a more in-depth analysis of the participants' views. It should further be noted that the processes involved within a focus group are based

on having open and honest discussions amongst the participants. This means that the environment should also be trusting and that participants should not be made to feel that others would manipulate their opinions or change their values (Larson et al., 2004).

However, focus group interviews are not without their limitations (Smithson, 2000). In analysing the nature of focus groups, they are open-ended and therefore cannot be completely pre-arranged, whereas other methods are clear in terms of their overall procedure and structure (Barbour, 2008). With focus groups, because they require that participants have freedom to engage in discussion with one another, the researcher has less control of how the focus group will be conducted, particularly in comparison with one-to-one interviews. Moreover, even though the focus group interviews are able to generate reliable data concerning individuals' opinions within a natural setting, Fern (2001) explains that this is problematic for generalising the data for a whole population. This is because the data are limited to a small sample size; hence, it would be inadequate to consider this as a representative sample for the general population. Focus groups also require a considerable amount of preparation time in comparison with other approaches, as there is a need to find a time that is suitable for all the participants, as well as arranging a suitable venue that is seen as neutral (Barbour, 2008).

Furthermore, it is necessary to consider the size and composition of the focus groups which vary according to different researchers. According to Macintosh (1993), some researchers consider six to ten participants to be a suitable number, whereas others have stated as high as fifteen or as low as four is acceptable (Kitzinger, 1995). Within this study, the implementation of the data collection tools adopted a sequential order, wherein the focus group interviews were conducted after visualising the questionnaire responses (Appendix B). The focus group interviews were then implemented to triangulate the findings of the questionnaire and to examine whether the responses were similar or different with regard to

the students' experience in using the OCL environment. In doing so, the validity of the questionnaire is enhanced. The meeting place for the focus group interviews can be held in different locations such as a school, library or other properties. However, it is proposed that the place should be neutral so that there are no positive or negative associations that can be made by the participants (Powell & Single, 1996). With regard to this study, the focus group interviews were held in a seminar room in KAU.

During the focus group, the researcher used a semi-structured interview schedule, which helped in a number of ways. It provided clear insight into the views of the participants as the researcher was able to expand upon various answers they gave and gain further elaboration from them. The importance of using interviews as a data collection tool is that it enables the researcher to gain a deeper understanding of the participants' beliefs, attitudes and opinions (Lichtman, 2006; Patton, 2002). Moreover, they can be used to acquire data that are difficult to obtain from a questionnaire, as well as allowing the researcher to follow up on responses that are either unclear or incomplete (Gay & Airasian, 1996). The role of the researcher in focus group interviews is to lead and facilitate the discussion, ensuring whatever is discussed is relevant to the subject at hand (Oppenheim, 2005).

With regard to the focus group interviews for this study, as the participants had already completed the questionnaire, they had an idea of what the topic was about and were prepared for the discussion. Consequently, all the participants were invited to attend a focus group via email which specified the place and time it would take place. From the responses that were given, two focus group interviews were conducted – one with 11 participants and the other with 8 participants. The actual focus group interviews were devised in such a manner that the participants were free to respond to the questions by the interviewer and other participants; this ensured that the discussion would fulfil the objectives of the study by gaining a deeper insight into the learners' perceptions and experiences in using the OCL

environment. The discussion was primarily based upon a visualisation of the earlier questionnaire that the participants had answered, and further elaboration was therefore sought.

In relation to the trustworthiness of the focus group interviews, one of the ways to achieve this is by reducing any form of bias whether this is related to the researcher, interviewees, questions, location or other aspect that could lead to impartiality (Cohen et al., 2011). Both focus group interviews were recorded, transcribed and translated by the researcher. Analysis of the qualitative data was therefore conducted through the following stages: 1) transcribing the data, 2) reduction of data and 3) applying thematic analysis of the data. Prior to transcribing the data, permission was sought from the participants to record the focus group interviews. Sinkovics and Ghauri (2008) explain that recording interviews greatly improves the trustworthiness of this particular data which in turn ensures more reliable results. They also affirm that, through such recordings, the researcher will not miss any key points or information in the interview which could be missed if it were only in written form.

In the context of the focus group interviews for this study, because the interviews were conducted in Arabic, it was further necessary to record them in order to transcribe and translate them into English for the purpose of analysis. Thus, during the transcription and analysis process, Microsoft Excel was used to extract the key points that were related and relevant to this research; that is, this researcher attempted to focus on the emerging themes that were explicitly linked to the questionnaire items. Furthermore, significant attention was given to the data, as the transcription of the recording was listened to numerous times in order to ensure what was said was accurate. The transcribed interviews generated a large amount of data for analysis. This required reducing the data, which was then followed by applying a thematic analysis of the information. Research in qualitative data analysis outlines a number of methods that can be implemented, such as a narrative approach, thematic analysis or

content analysis (Patton, 2005; Gibbs, 2002). Thematic analysis was therefore adopted in this study as it is an approach that is frequently used in the analysis of social contexts (Namey et al., 2007).

As the name suggests, the focus of this method of analysis is on the occurrence of different themes that emerge from the data which are then categorised into main or sub-themes (Patton, 2005). In doing so, the transcripts were examined several times and from this, the themes that were linked to the items in the questionnaire were identified and categorised accordingly. According to Corbin and Strauss (2014), implementing this approach can help researchers to focus their attention on the relevant findings within data. Thus, within this study, an attempt was made to focus on the themes that would ultimately contribute to answer the research question.

3.6 Ethical considerations

Prior to conducting this research, it was necessary to ensure that all the requirements related to ethical considerations were obtained and approved, whether this was from the School of Education in Durham University or at KAU. An ethical approval form provided (and subsequently authorised) by the Ethics Committee in the School of Education at Durham University was completed in order to allow this research to be conducted within a timeframe of three months, commencing from mid-February 2014 to the end of April 2014 (see Appendix C). In relation to this, approval was also required from KAU, allowing the researcher to carry out the field study at the University (see Appendix D). Furthermore, with regard to ethical considerations towards the participants, as the researcher used an online web survey to conduct the first stage of the study, the students were sent an email invitation to request them to participate in the study. Within this email, the link for the web survey was given; however, before entering the survey, the participants were given an overview and objectives of the research, as well as informing them of all their rights. The participants were

informed that their involvement was purely voluntary, and that, even though the questionnaire did not ask for any personal information (i.e., their names), all the data would still be under strict confidentiality and only used for the purpose of this research. Participants were also notified that they could withdraw from the study at any time, without any consequences. Similar ethical considerations were applied for the focus group stage of the study, including an assurance that the participants' personal details would all remain anonymous.

3.7 Sampling

Johnson and Christensen (2008, p.217) define a sample to be "a set of elements taken from a larger population according to certain rules". Thus, the sampling process is a vital stage within research, as Gay and Airasian (1996, p.111-112) explain "the process of selecting a number of individuals for a study in such a way that the individuals represent the larger group from which they were selected". In other words, the objective behind the sampling process is to collate data that can be representative of an entire target population; this is achieved by employing a sample that shares similar characteristics and homogeneity amongst its members. While there are many different types of sampling in relation to the questionnaire sample used in this study, a simple random sampling approach was adopted, in which participants voluntarily chose to take part. They were also self-selected for participation, which was due to the suitability in the application of large questionnaire samples, which can be used to adequately represent the population of the study and gain unbiased results (Cohen et al., 2011; Fraenkel & Wallen, 2006).

According to Johnson and Christensen (2008, p.225), random sampling is a way "in which every member of the population has an equal chance of being selected". Gay and Airasian (1996, p. 104) further point out that random sampling is "the best single way to obtain a representative sample". One area of discussion that is prevalent concerning the

sample is the size of the sample. While there is no fixed rule to apply for what the sample size should be, it is evident that the larger the sample, the more accurate it is as a representation of that specific population and less errors will be produced (Kerlinger, 1986). Nevertheless, there are a number of key factors that can determine the sample size, such as the social context of the research topic, the importance behind it as well as the overall nature of the research itself (Gay & Airasian, 1996).

3.8 Chapter summary

This chapter details the methodology that has been adopted for this study and the necessary tools that have been implemented in order to answer the research question. A detailed review of the philosophical principles and paradigms used within the research were outlined, followed by an exploration of the research methodologies that were implemented. Upon analysing these methodologies, a rationale and justification were given in terms of the decision to adopt a mixed methods approach, followed by an overview of the data collection instruments that were applied, as well as the ethical considerations that were taken into account throughout this study. The next chapter will present the results from the quantitative and qualitative analysis of the data.

4 Chapter Four: Major Findings and Data Analysis

4.1 Introduction

The preceding chapters provide a detailed insight into the theoretical background and research methods that have been adopted for this research. This chapter commences with the results from a quantitative and qualitative analysis of the data, which explores factors influencing the effective use of a collaborative learning approach within an online environment as experienced by male Saudi undergraduate distance learning students in KAU. These factors covered technology related factors, student characteristics, tutors' roles and course characteristics. To identify these influential factors, four sub-questions were asked in order to fulfil the objective of this research:

1) To what extent does the existing infrastructure and LMS provide a reliable platform in facilitating the collaborative approach within an online environment from the students' experience?

2) What are the students' characteristics that may influence the collaborative approach to occur within the existing online environment?

3) What are the tutors' roles that may influence the effective use of the collaborative approach within an online environment from the students' experience?

4) From the students' experience, to what extent do the course characteristics influence the effective use of the collaborative approach within an online environment?

This chapter begins by presenting the results from the assessment of the research instrument, in order to assess its reliability and validity for the main study. Following this, the demographic information of the study sample is provided, such as the respondents' ICT skills, previous experience with OCL environment and any training on using LMS. Moreover, this chapter seeks to illustrate the data to answer the four research sub-questions independently and in a consecutive manner, where each sub-question is followed by the findings that emerged from the open-ended questions and focus group interviews. Finally, the chapter closes by concluding what findings have been made and summarises them accordingly.

4.2 Reliability and validity of the instrument used in the main study

For a research instrument to be robust and draw a valid conclusion, it is essential to assess and evaluate its reliability and validity (Field, 2013). This should be done before statistical techniques are conducted on the generated data, as it will instil confidence in the data and the findings during the analysis and give reassurance that they are of high quality (Bryman, 2012; Sarantakos, 2013; Field, 2013).

4.2.1 Reliability of the research instrument

Reliability is the measurement that is used to assess the accuracy and stability of a research instrument (Sarantakos, 2013). As illustrated in Table 4.1, when assessing the reliability of the research instrument in this study, the Cronbach Alpha score for the main study scales was 0.874, which indicates a high level of reliable measurement.

Table 4.1 Reliability Statistics

Cronbach's Alpha	N of Items
.874	**33**

Table 4.2 Exhibiting coefficient analysis scale Alpha for each factor

Factors	**N of Items**	**Alpha coefficient**
Technology related factor	6	**.949**
Students' characteristics	10	**.934**
Tutor's role	9	**.954**
Course characteristics	8	**.939**
All factors	33	**.874**

Straub (1989, p.160) states that, "findings based on a reliable instrument are better supported,

and parameter estimates are more efficient". As this research utilises questionnaires for one of the primary research instruments, it can be tested for reliability by assessing the internal consistency (Hinton et al., 2004). Table 4.2 highlights the excellent and high reliability scores that were found in this instrument, which indicates a great deal of confidence in the results that will be found. A breakdown score for each of the factors was: .949 for technology related factors, .934 for students' characteristics, .954 for tutors' role and .939 for course characteristics .939 with an overall alpha value for all four factors as .874. According to Hinton et al. (2004), this is regarded as excellent consistency and high reliability respectively. It should be noted that other measures of reliability also exist, which measured by test-retest reliability which is where the same data instrument is repeated under similar conditions at different times, and if the results from the study are consistent with one another, it indicates a high level of reliability (Oppenheim, 2005; Bryman, 2012; Sarantakos, 2013).

4.2.2 Construct validity

To examine a research instrument's construct validity, one approach is to establish the factorial validity of its constructs (Bagozzi, 1980). By implementing factor analytic techniques (i.e. confirmatory factor analysis or exploratory factor analysis), both the convergent and discriminant validity can be effectively assessed (Straub et al., 2004). The results from the pilot study revealed that this research instrument exhibited a good indication of construct validity; however, certain items and subscales needed modifying. Consequently, when administering the research instrument for the main study, it was imperative that any relevant changes were made accordingly, therefore improving or maintaining high construct validity.

Table 4.3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (**KMO**).		**.886**
Bartlett's Test of Sphericity	Approx. Chi-Square	29333.369
	df	528
	Sig.	**.000**

The KMO measure of sampling adequacy and Bartlett's Test of Sphericity were then conducted for the instrument of the main study in order to check the factorability of the data. As presented in Table 4.3, the results for these tests indicated that the data met the requirements that were necessary for factor analysis. At this stage, using the Principal Component Analysis with orthogonal rotation (Varimax), the research data were then factor analysed. In order to testify the construct validity of the research instrument, factor analysis is a statistical method that is commonly used (Straub et al., 2004). As highlighted in Table 4.4 and Appendix E, the extracted factors had an Eigenvalue of 1 and all the items were clearly loaded in regards to their associated factors respectively, confirming construct validity was established.

Table 4.4 Total Variance Explained

Factor	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	6.902	20.915	20.915	6.902	20.915	20.915	4.617	19.052	19.052
2	5.692	20.278	41.193	5.692	20.278	41.193	3.443	21.526	40.578
3	3.341	16.185	57.377	3.341	16.185	57.377	2.784	16.527	57.105
4	1.324	14.341	**71.718**	1.024	14.341	71.718	1.022	14.613	71.718
5	.901	3.851	75.569						
6	.821	3.104	78.673						
7	.772	2.730	81.403						
8	.611	2.489	83.892						
9	.524	2.340	86.232						
10	.417	1.852	88.084						

Extraction Method: Principal Component Analysis

Table 4.4 shows that four distinct factors emerged from this analysis, explaining that 71.7% of the variances were observed in the underlying items.

In addition, Appendix E outlines the items that were loaded on each of the four factors. For factor one, nine items were loaded, all of them with a score higher than 0.80. Additionally, no significant loadings were associated to any of the other factors and these nine items were associated with tutor's roles. For factor two, ten items were loaded, nine of them with a score higher than 0.70 and one higher than 0.30. Additionally, no significant loadings were associated to any of the other factors and these ten items were associated with students' characteristics. For factor three, eight items were loaded, seven of them with a score higher than 0.80 and one with a loading of 0.43. Additionally, no significant loadings were associated to any of the other factors and these eight items were associated with course characteristics. For factor four, six items were loaded, all of them with a score higher than 0.80. No significant loadings were associated to any of the other factors and these eight items were associated with course characteristics.

4.3 Participants' demographic background and variables within the sample

To effectively research the problem in any study, the relevant participants within the population must be identified, which also includes defining those that are accessible and the appropriate sample size (Burns, 2000). In this study, the population identified was undergraduate university students in Saudi Arabia, with the accessible participants being male distant learners studying in their Preparatory Year at KAU. As mentioned in Chapter Three, a questionnaire was sent out to 975 learners via email during the second semester in 2014; of which 729 responded. The following sections provide a detailed insight into the participants' demographic characteristics, including their type of enrolment, age, ICT skills, their previous experience with the OCL environment, any LMS training at university and their perception of the current situation of using OCL in KAU.

4.3.1 Students' enrolment type (full time/part time)

Table 4.5 Students' enrolment type (full time/part time)

Item	Frequns %	Full time	Part time	Total
Students' enrolment	F	403	326	729
	%	55.3	44.7	100.0

Table 4.5 provides details for the frequencies and percentages of the type of enrolment that students can be categorised into, showing 55.3% of the participants classed as full-time students and 44.7% as part-time.

4.3.2 Age

Table 4.6 Participants' Age

Item	Frequns %	Under 19	19-21	Over 21	Total
Age	F	34	419	276	729
	%	4.6	57.5	37.9	100.0

The data pertaining to the participants' age was subdivided into three groups, which is illustrated in Table 4.6. Within these groups, 4.6% of the sample was composed of learners under the age of 19, while 57.5% consisted of those between 19 and 21, and finally 37.9% of learners were aged over 21.

4.3.3 ICT skills

Table 4.7 Participants' ICT skills

Item	Frequns %	Beginner	Intermediate	Skilled	Total
ICT skills	F	176	305	248	729
	%	24.1	41.8	34.0	100.0

Table 4.7 outlines the details for the frequencies and percentages of the participants' own perception of their ICT skills. From the three categories that were defined, 34% of the participants ranked themselves as skilled, with a higher proportion of them ranking themselves as intermediate (41.8%), and lastly, 24.1% considering themselves to be beginners.

4.3.4 Participants' previous experience within OCL settings

Table 4.8 Participants' previous experience with OCL

Item	Frequns %	Yes	No	Total
Do you have any previous experience with OCL setting	F	526	203	729
	%	72.2	27.8	100.0

Table 4.8 presents the frequencies and percentages of whether the participants have had previous experience within the OCL environment. A considerable majority of them responded affirmatively (72.2%), whilst 27.8% of the participants stated they had no previous experience.

4.3.5 LMS Training

Table 4.9 Training on how to use LMS

Item	Frequns %	Yes	No	Total
Training on how to use LMS	F	277	452	729
	%	38.0	62.0	100.0

Table 4.9 outlines what percentage of the participants had received training on how to use LMS, of which a larger proportion of them stated they had not had training (62.0%), whereas 38.8% responded that they had.

4.3.6 The current situation in terms of using OCL in KAU

Table 4.10 The current situation of using OCL in KAU

Item	Frequns %	It is not used at all (0 weeks)	It is occasionally used (1-6 weeks)	It is used most of the time (7-12 weeks)	Total
The current situation of the OCL is used in KAU	F	5	567	157	729
	%	.7	77.8	21.5	100.0

The participants were asked about how many times the collaborative approach was used within the online environment in KAU per semester. Table 4.10 shows that a greater percentage of participants (77.8%) stated that the collaborative approach within online environment was used occasionally (1-6 weeks per semester), while 21.5% asserted it was used most of the time (7-12 weeks).

In summary, the demographic data provide a plethora of valuable information that can assist this research. In each of the sections, the data showed clear findings, particularly in identifying some of the common frequencies and trends. For instance, while the results revealed 55% of the students were enrolled full-time and the majority of them were aged between 19-21, it also showed higher proportions of the participants ranking themselves as intermediate in their ICT skills. The data also showed the significant trend that 72.2% of the students have previous experience with the OCL environment, which corresponded to the data that highlighted 77.8% of them stating that a collaborative approach within online settings was used occasionally per semester. In contrast, the data further showed that a greater percentage of the students had no training on how to use LMS. Having provided the overall demographics for the participants, the next section will outline how this correlates to the defined variables.

4.4 Correlation of variables

This section seeks to illustrate what effects the selected variables have on the learners' experience within the OCL environment. The variables that were considered were the participants' type of enrolment (i.e. full-time/part-time), their age, their ICT skills, their previous experience with the OCL environment, whether they have previously received LMS training and also addressing the current situation of how a collaborative approach within the online setting is used in KAU. The results to be analysed from the questionnaires were generated by applying the Statistical Package for Social Science (SPSS). In doing so, T-tests and a One-Way Analysis of Variance (ANOVA) tests were conducted on the raw scores for each item depending on the number in the group.

4.4.1 Type of enrolment (full-time /part-time)

To understand whether the type of enrolment (full-time or part-time) affects the factors influencing the effective use of OCL environment, a 'T-test' was used.

Table 4.11 The difference in the type of enrolment by t-test

	Fulltime / part time	N	mean	Std. Dev	t	df	p-Value
Technology related factors	Full time	403	3.2928	1.10495	-1.128	727	.260
	part time	326	3.3877	1.16073			
Student characteristics	Full time	403	3.3697	.92399	5.101	727	.001
	part time	326	3.0080	.98577			
Tutors' roles	Full time	403	2.9176	1.09965	-.895	727	.371
	part time	326	2.9898	1.06223			
Course characteristics	Full time	403	3.3458	1.01646	-.149	727	.882
	part time	326	3.3570	.98786			

Table 4.11 shows that there were no significant differences between the two types of enrolment in relation to the technology related factor, where T=-1.128 and p= .260. However, for the students' characteristics, there were significant statistical differences between the two

types of enrolments, where T = 5.101 and p= .001. Furthermore, similar to the first factor, there were no significant differences between the two types of enrolment with regards to the tutors' roles or with the course characteristics, which were T=-.895, p= .371 and T=-.149, p= .882 respectively. Consequently, the existence of the significant statistical difference at a level of 0.05 for students' characteristics indicates that those who are enrolled as full-time students have a more positive experience towards the OCL environment.

4.4.2 Age

To identify whether the three age groups (under 19, 19-21, over 21) affected the factors influencing the effective use of OCL setting, a one-way ANOVA test was conducted.

Table 4.12 The difference of Age shown by ANOVA test

		Sum of Squares	df	Mean Square	F	P-Value
Technology related factors	Between Groups	2.287	2	1.144	.895	.409
	Within Groups	928.017	726	1.278		
	Total	930.304	728			
Students characteristics'	Between Groups	26.148	2	13.074	14.459	.001
	Within Groups	656.466	726	.904		
	Total	682.614	728			
Tutors' role	Between Groups	3.698	2	1.849	1.579	.207
	Within Groups	850.061	726	1.171		
	Total	853.760	728			
Course characteristics	Between Groups	.254	2	.127	.126	.882
	Within Groups	732.273	726	1.009		
	Total	732.527	728			

Table 4.13 Post Hoc test Tukey (Students' characteristics)

Age		Under 19	19-21	Over21
	Mean	Sig.	Sig.	Sig.
Under 19	3.2265	-	.695	.294
19-21	3.3644	.695	-	.001*****
Over 21	2.9681	.294	.001*****	-

*The mean difference is significant at .05 level.

Table 4.12 reveals that there were no significant differences between the three age groups with regards to the technology related factor, where F=.895 and p=.409. In contrast, there were significant statistical differences between the age groups in relation to the second factor (students' characteristics), where F =14.459 and p= .001. To determine which of the three age groups were statistically significant, this one-way ANOVA test was subjected to further testing using the Post-Hoc Test Tukey. Table 4.13 revealed that there were no statistically significant differences when comparing the under 19 group with the 19-21 and over 21 groups (*p*=.695, .294 respectively), but that there was a statistically significant difference between the 19-21 and over 21 groups (*p*=.001). As for the tutors' roles and course characteristics, there were no significant differences between the two groups, where F=1.579, p=.207 and F=.126, p=.882 respectively. This shows that age has an effect on the student characteristics. This may due to that younger student will be more inclined to view technology in a positive light, which in turn will cause them to adopt it, whereas those who are older find it difficult to use and subsequently adopt.

Having eliminated the significance of both types of enrolments and age, the next sub-section considers the influence of ICT skills, the students' experience with the OCL environment, whether the students have received training on how to use LMS and the current situation in terms of using a collaborative approach within online settings in KAU.

4.4.3 ICT skills

To affirm whether the learners' self-ratings of their ICT skills (i.e. beginner, intermediate or skilled) affected the factors influencing the effective use of OCL, a one-way ANOVA test was performed.

Table 4.14 The difference of ICT skills shown by ANOVA test

		Sum of Squares	df	Mean Square	F	P-Value
Technology related factors	Between Groups	297.908	2	148.954	171.001	.001
	Within Groups	632.396	726	.871		
	Total	930.304	728			
Student characteristics	Between Groups	1.243	2	.621	.662	.516
	Within Groups	681.371	726	.939		
	Total	682.614	728			
Tutors' role	Between Groups	5.742	2	2.871	2.458	.086
	Within Groups	848.017	726	1.168		
	Total	853.760	728			
Course characteristics	Between Groups	11.687	2	5.844	5.885	.003
	Within Groups	720.840	726	.993		
	Total	732.527	728			

Table 4.14 presents the data for this test, which affirmed a significant difference was found between the categories of ICT skills with regards to the technology related factor, where F= 171.001 and p=.001. To find out which of the three categories was statistically significant, this one-way ANOVA test was subjected to further testing using the Post-Hoc Tukey Test. Table 4.15 revealed that there was a statistically significant difference between the beginner, intermediate and skilled groups (p=.001).

Table 4.15 Post-hoc Tukey test (Technology related factors)

ICT skills		Beginner	Intermediate	Skilled
	Mean	Sig.	Sig.	Sig.
Beginner	2.3784	-	.001*	.001*
Intermediate	3.2852	.001*	-	.001*
skilled	4.0758	.001*	.001*	-

The mean difference is significant at .05 level.

With regards to the tutors' roles and student characteristics, there were no significant differences between the two groups, where F=.662 and p=.516 and F= 2.458, and p=.086 respectively. However, for course characteristics, there was a significant difference in relation to ICT skills. Similar to the first factor (technology related factor), the results of the

one-way ANOVA test were subjected to further analysis using the post-hoc Tukey test. The test (Table 4.16) showed that there were no statistically significant differences between the beginner and intermediate groups (p=.899), however there was a statistically significant difference between the beginner and skilled groups (p=.001), as well as a statistically significant difference between the intermediate and skilled groups (p = .001).

Table 4.16 Post hoc Tukey test. (course characteristics)

ICT skills		Beginner	Intermediate	Skilled
	Mean	Sig.	Sig.	Sig.
Beginner	3.2344	-	.899	.001*
Intermediate	3.2758	.899	-	.001*
skilled	3.5257	.001*	.001*	-

The mean difference is significant at .05 level.

4.4.4 OCL experience

To identify the differences relating to the learners' responses to their previous experience with an OCL environment that has influenced the effective use of OCL, a T-test was performed on the two selected categories (Yes/No).

Table 4.17 The difference of the previous OCL experienced shown by (t-test)

	CSCL Experienced	N	Mean	Std. Dev	t	df	p-Value
Technology related factors	Yes	526	3.2989	1.12229	-1.400	727	.162
	No	203	3.4296	1.14870			
Students' characteristics	Yes	526	3.2717	.96600	2.874	727	.004
	No	203	3.0429	.95709			
Tutors' roles	Yes	526	2.9227	1.09741	-1.090	727	.276
	No	203	3.0203	1.04385			
Course characteristics	Yes	526	3.3522	1.01237	.059	727	.953
	No	203	3.3473	.98114			

Table 4.17 shows that, while there were no significant differences between the two categories in regards to technology related factors (T=-1.400 and p=.162), there were significant

statistical differences between the two categories in relation to students' characteristics, where T=2.874 and p=.004. This was the only significant difference found, as the tutors' roles and course characteristics had no significant differences, where T=2.874 and p=.276 and T=.059 p=.953 respectively. Thus, the existence of significant statistical differences, at the level of 0.05 in the students' characteristics, is in favour of those that responded affirmatively to having previous experience in OCL.

4.4.5 LMS training

To understand the differences relating to the learners' responses of having received training on how to use LMS, a T-test was performed on the two selected categories (Yes/No).

Table 4.18 The difference of LMS Training shown by (T-test)

	OCL Experienced	N	Mean	Std. Dev	t	df	p-Value
Technology related factors	Yes	277	3.9726	.71595	13.273	727	.001
	No	452	2.9447	1.16049			
Students' characteristics	Yes	277	3.2292	1.02064	.464	727	.643
	No	452	3.1949	.93574			
Tutors' role	Yes	277	2.9627	1.05959	.250	727	.802
	No	452	2.9420	1.09809			
Course characteristics	Yes	277	3.3755	.99895	.519	727	.604
	No	452	3.3357	1.00645			

Table 4.18 shows that there were significant differences between the two categories in regards to technology related factors, where T=3.273 and p=.001. In contrast, there were no significant statistical differences between the two groups in students' characteristics (T=.464 and p=.643), or in the tutors' roles (T=.250 and p=.802). Similarly, for course characteristics, there were also no significant differences found, where T=.519 and p=.604. As a result, the existence of significant statistical differences at the level of 0.05 in technology related factors is in favour of those that responded 'Yes' to having received LMS training.

4.4.6 The current situation in terms of using a collaborative approach within the online setting in KAU

To determine whether the current situation of using collaborative approach within online setting in KAU (i.e. how many times it was used per semester – not at all, occasionally, most of the time) affected the factors that influence the effective use of OCL environment, a one-way ANOVA test was performed.

Table 4.19 The difference of OCL current situation used in KAU by ANOVA test

		Sum of Squares	df	Mean Square	F	P-Value
Technology related factors	Between Groups	14.789	2	7.395	5.864	.003
	Within Groups	915.515	726	1.261		
	Total	930.304	728			
Students' characteristics	Between Groups	11.609	2	5.804	6.280	.002
	Within Groups	671.005	726	.924		
	Total	682.614	728			
Tutors' role	Between Groups	2.103	2	1.052	.896	.408
	Within Groups	851.656	726	1.173		
	Total	853.760	728			
Course characteristics	Between Groups	2.878	2	1.439	1.432	.240
	Within Groups	729.649	726	1.005		
	Total	732.527	728			

Table 4.19 affirmed that there was a significant difference found between how often OCL was used in the current situation at KAU with regards to the technology related factor, where F=5.864 and p=.003. To find out which of the three categories was more significant, the one-way ANOVA test was subjected to further testing using the post-hoc Tukey test. Table 4.21 revealed that there were no statistically significant differences when comparing the "it is not used at all" category, with the "it is occasionally used" and "it is used most of the time" categories (p=.412, .146 respectively); however, there was a statistically significant

difference between the "it is occasionally used" and "it is used most of the time" categories (p=.001)

Table 4.20 Post-Hoc test Tukey (Technology related factors)

CSCL Used in KAU		It is not used at all	It is occasionally used	It is used most of the time
	Mean	Sig.	Sig.	Sig.
It is not used at all (0 week)	3.0400	-	.412	.146
It is occasionally used (1-6 weeds)	3.2852	.412	-	.001*
It is used most of the time (7-12 weeks)	3.0828	.146	.001*	-

The mean difference is significant at .05 level.

Table 4.20 also showed that there was a significant difference found between how often OCL was used in the current situation at KAU in relation to students' characteristics, where F= 6.280 and p=.002. To find out which of the three categories was statistically significant, the one-way ANOVA test was subjected to further testing using the Post Hoc Test Tukey. Table 4.21 outlines that there were no statistically significant differences when comparing the "it is not used at all" category with the "it is occasionally used" and "it is used most of the time" categories (p=.514, .912 respectively), but there was a statistically significant difference between the "it is occasionally used" and "it is used most of the time" categories (p = .001).

Table 4.21 post-Hoc test Tukey (Students' characteristics)

CSCL Used in KAU		It is not used at all	It is occasionally used	It is used most of the time
	mean	Sig.	Sig.	Sig.
It is not used at all (0 week)	2.8000	-	.514	.912
It is occasionally used (1-6 weeds)	3.2750	.514	-	.001
It is used most of the time (7-12 weeks)	2.9790	.912	.001	-

The mean difference is significant at .05 level.

As for tutors' roles and course characteristics, no significant differences where found in either, where T= .250 and p= .802, and T=.519 and p=.604 respectively.

4.5 Answering the research questions

The subsequent section allows the analysis of the data to progress further in answering the main research question, which explores what factors are influencing the effective use of the OCL environment as experienced by male Saudi undergraduate distance students in KAU.

The following sections relate to the sub-questions for this research. For instance, they will expound upon the technology related factors, in terms of the suitability of the infrastructure that provides a reliable platform to facilitate online collaborative learning, the students' characteristics that may encourage or hinder collaborative learning, the tutors' roles that influence the effective use of OCL and the course characteristics.

4.5.1 The first question/technology related factors

In terms of providing appropriate and adequate infrastructure to offer a reliable platform, the theme of technology related factors is vital to this study. The first sub-question therefore states: *'To what extent does the existing infrastructure and the LMS provide a reliable platform in facilitating the OCL environment from the students' experience?'* In this question, aspects pertaining to the technology related factors are investigated to assess whether they are appropriate and the infrastructure is adequate in terms of providing a reliable platform for the collaborative learning environment, as well as exploring the existing situation of the LMS platform that is used in KAU, from the students' personal experiences. Table 4.22 shows the participants' responses to six statements relating to the availability of computers, adequate Internet speed, the compatibility of LMS with different electronic devices, the ease of use for LMS, the existence of the OCL tools in the KAU LMS, and the adequateness and immediate availability of technical support. These statements were then ranked in descending order according to the mean.

Table 4.22 Technology related factors

Rank	Items	Fre / %	S. agree	Agree	Neutral	Disagree	S. disagree	Mean / Std.d	Items No
1	LMS features synchronous (i.e. written or voice chat) or asynchronous (i.e. forums)	F	139	315	107	126	42	**3.53**	6
		%	19.1	43.2	14.7	17.3	5.8	1.151	
2	There is adequate internet speed	F	138	297	115	127	52	**3.47**	3
		%	18.9	40.7	15.8	17.4	7.1	1.186	
3	The availability of computers to access LMS is appropriate and adequate	F	136	303	107	130	53	**3.47**	2
		%	18.7	41.6	14.7	17.8	7.3	1.190	
4	The LMS is easy to use and I find no problems when navigating it	F	136	285	64	156	88	**3.41**	5
		%	18.7	39.1	8.8	21.4	12.1	1.220	
5	The LMS is compatible with the devices that I use (i.e. PC, Tablet, Smartphone)	F	111	179	81	248	110	**2.91**	4
		%	15.2	24.6	11.1	34.0	15.1	1.339	
6	If I encounter any problems with LMS, there is adequate, immediate technical support available at any given time.	F	97	143	106	266	117	**2.78**	7
		%	13.3	19.6	14.5	36.5	16.0	1.299	

In Table 4.22, the mean for the six statements ranges from 3.53 to 2.78, which can be explained as follows. For the first statement, OCL tools existing in KAU LMS are synchronous (i.e. written or voice chat) or asynchronous (i.e. forums), there was a mean rating of 3.53 (agree). The second statement, there is adequate Internet speed, was a mean rating of 3.47 (agree). Similarly, the third statement, the availability of computers to access LMS is appropriate and adequate, also was a mean rating of 3.47 (agree). As for the fourth statement, the LMS is easy to use and I find no problems when navigating through it, there was a mean rating of 3.41 (agree). The fifth statement, the LMS is compatible with the devices that I use (i.e. PC, Tablet, Smartphone), was a mean rating of 2.91 (neutral) and finally, the sixth statement, if I encounter any problems with LMS, there is adequate, immediate technical support available at any given time, was a mean rating of 2.78 (neutral). Thus, from the overall six statements pertaining to the technology related factors, it was a mean rating of 3.43 (agree).

4.5.1.1 ***The major findings from the written open-ended responses (questionnaire) and focus groups' interview in relation to the technology related factor***

As this study adopts a sequential explanatory design, the data that emerged from the questionnaire was elaborated upon further using the data from the open-ended responses on the questionnaire, and from the focus groups' interview. The objective of this was to clarify specific issues that were highlighted, to expound upon specific points from the questionnaire, and to gain a deeper insight into the participants' responses and experiences.

In relation to the availability of a computer to access LMS, the importance behind this is that it enables the students to have easier access to the materials that they require. From the 60% of participants who agreed/strongly agreed that the availability of computer access to LMS was appropriate and adequate, the open-ended responses and focus groups interview provided further insight. When asked whether they thought this statistic was accurate, the participants expressed that it was, because, in general, possessing a computer was common and affordable in Saudi homes. One participant stated, "It is normal to have a computer because they are not expensive to buy. Even if a person cannot afford a new computer, the second-hand ones with a very good condition are still cheap." This indicates that affordability was highlighted as a discussion point, however, it was not seen as a barrier towards accessibility to LMS due to home computers being relatively inexpensive.

Furthermore, when discussing the issue of Internet speed, this topic is given significant importance, as a slow Internet connection and intermittent access are two of the main reasons causing student frustration. In the context of LMS, learners may experience this level of frustration because they are able to open the LMS and launch their necessary courses, but they must wait for it to load fully. Thus, when expounding upon the 60% of participants who strongly agreed/agreed that the Internet speed was adequate, the responses in the open-ended answers and focus groups interview were slightly conflicting. While some of the participants stated that the Internet provided a good speed in most places, some of the participants stated this was not the case because the area that they lived in "has not been

covered by fibre optic internet, which is much faster than what I currently have." That said, some of responses stated that broadband was available and suited their needs. Additionally, attention was given to the use of wireless dongles, which were quite popular amongst the participants, enabling them not only adequate speed but also increasing their accessibility to the Internet, and subsequently to the LMS.

With the constant improvement and advent of technology, it is common for users to utilise various devices in order to access online environments. Thus, when the results from the questionnaire indicated that only 39% of the participants strongly agreed/agreed that LMS is compatible with the participants' devices, the reasons for this were: difficulties pertaining to the use of different software or operating systems, having to download supporting software in order to make the LMS function accordingly and also the aesthetics when using the LMS on other devices. In terms of the different platforms or operating systems, some of the users stated that the LMS did not work when using different web browsers. For instance, one participant stated, "the old versions of some web browsers do not work with LMS".

Moreover, many of the participants had difficulties when it came to using the LMS on other devices that required supporting software such as launcher installer, Java or Flash plugins. Without installing these missing plugins for the web browser, the learners are not able to view the course or access LMS. One participant expressed his frustration when attempting to use his iPad to access the LMS; but when it asked him to download the supporting software "the iPad does not let me download these things so I cannot use it". Additionally, those that were able to access the LMS on other devices such as their smart phones or tablets stated that the interface and functions were difficult to view because it "seems as though it has not been designed to be mobile-friendly. The screen is too small and I cannot see what I need to".

When designing or developing a software or programme, it is crucial that it is made as easy as possible for users to navigate and interact with, so that they have a good user experience. When discussing the statistic of those who strongly agreed or agreed that the LMS was easy to use and they had no problems navigating through it (58%), many confirmed this and agreed that they also had no problems with it. Some of the participants indicated that as they became more familiar with the LMS it became easier to use; one participant explained, "during my first time, it was quite difficult but then it became easier", another participant stated that "it is easy to navigate through the interface, but when it comes to the practical use it is difficult."

The variety and availability of OCL tools that exist within an LMS environment gives the learners more flexibility when interacting with one another and the tutor. To expound upon the responses given by the 63% of participants who strongly agreed/agreed that the collaborative learning tools in the KAU LMS was exist both synchronous and asynchronous, despite some external issues such as technical complications or frequency of use when using certain tools, the open-ended questions and focus groups responses affirmed that the use of text chat and forums were present. One of the key aspects of using any online environment is that it is vital that there is immediate and adequate technical support if users encounter any problems or issues. As a result, when commenting or responding to the 62% of participants who stated they did not receive adequate and immediate technical support when using LMS, a considerable amount of those from the focus group interviews and open-ended questions strongly affirmed that this was a problem and stated clearly that the "technical support is not sufficient enough".

Many of the negative comments were directed towards the availability and response time from the technical team, where participants stated, "most of the time, when I need technical support, they do not respond" and, "the support is given some of the time but it is

not 24 hours a day", as well as, "it takes a long time to get in touch with the technical team and for them to respond back to us" or "when we report any problems, it takes a while for them to get back to me". This causes a great deal of frustration for the learners, particularly "if I do not have access to the platform during the lectures".

Furthermore, the participants expressed their grievances regarding the actual level of support they received once the technical team responded to them, where some felt that even if they explained the problem, the "team takes a long time to not only understand it, but also to resolve it". They wanted the technical teams to know that if they had the necessary support, they would "use the platform in a good way".

In contrast, however, some participants stated that the technical team were not fully to blame, as some of this should be placed on the user. One participant explained that he had no problems with the technical team and the reason for this was because it "depends on how you report your problem; if you explain it well, they can deal with it accordingly, but if you cannot explain it properly, they won't be able to help you". This was further expressed by another participant, who summarised the issue from the participants' perspective: "We need the technical team to consider our circumstances and that many of us are not advanced in technical knowledge or professionals in dealing with this platform. So we need their support". Lastly, suggestions were given by some of the participants, such as having a database of recurring problems: "From time to time, the same problems occur. So why do the technical teams not create a database of all the recurring problems, so we can deal with them instead of having to wait for them to deal with us individually".

To summarise this section, the first question sought to discuss the aspects pertaining to technology, where it sought to assess whether this is an appropriate and adequate infrastructure in terms of providing a reliable online collaborative learning environment.

Within this factor, the availability of computers was explored, where the participants felt that this was adequate and appropriate, and did not cause any hindrance in accessing a reliable platform to use the OCL environment. Furthermore, the Internet speed was an area of discussion in this study, of which the participants held opposing views. Analysis of the quantitative data showed that the participants agreed that the Internet speed was adequate, however, the qualitative data analysis showed there were a number of concerns by the participants, who felt it could cause a hindrance in accessing the LMS accordingly. In terms of the LMS being accessible on various devices, the participants rejected the notion that the LMS was adequate on such devices, citing compatibility issues as the overall problem in hindering the effective use of the OCL and collaborative learning. In contrast, the learners confirmed the existence, availability and diversity of collaborative learning tools within the LMS for the purpose of collaboration, indicating that these tools provided a reliable environment. With regards to the availability of immediate and adequate technical support, it was clear that this was a hindrance in the effective use of this environment, as expressed by the participants concerning this issue.

4.5.2 The second question/student characteristics

The second sub-question is *'What are the student characteristics that may influence the collaborative learning approach to occur within the existing online environment?'*

Table 4.23 Students' characteristics factors

Rank	Items	Fre / %	S. agree	Agree	Neutral	Disagree	S. disagree	Mean / Std.d	Items No
1	My previous experience with online environment helps me to use OCL.	F	123	381	111	99	15	**3.68**	10
		%	16.9	52.3	15.2	13.6	2.1	.975	
2	Lack of knowledge when discussing a particular topic hinders my participation.	F	149	282	106	127	65	**3.54**	15
		%	20.4	38.7	14.5	17.4	8.9	1.195	
3	My ICT skills help me to use the learning environment.	F	127	270	126	160	46	**3.49**	11
		%	17.4	37.0	17.3	21.9	6.3	1.124	
4	Shortcomings in my collaborative skills (i.e. writing ability) can hinder my participation using OCL environment.	F	137	265	117	142	68	**3.47**	14
		%	18.8	36.4	16.0	19.5	9.3	1.248	
5	I need more training and guidance to adopt OCL environment	F	152	263	78	157	79	**3.44**	17
		%	20.9	36.1	10.7	21.5	10.8	1.314	
6	I am reluctant to use OCL (i.e. posting on forums/discussion boards) for fear of criticism from my peers.	F	118	247	153	147	64	**3.43**	16
		%	16.2	33.9	21.0	20.2	8.8	1.208	
7	I am willing to use OCL environment during my studies and when completing a given task.	F	109	242	108	198	72	**3.41**	9
		%	15.0	33.2	14.8	27.2	9.9	1.254	
8	Other responsibilities hinder my participation in OCL	F	84	189	172	186	98	**3.27**	12
		%	11.5	25.9	23.6	25.5	13.4	1.230	
9	I am aware of the importance behind collaborative learning.	F	92	207	39	274	117	**2.98**	8
		%	12.6	28.4	5.3	37.6	16.0	1.335	
10	I find it difficult to accept collaborative approach. (Resist change)	F	63	129	139	267	131	**2.92**	13
		%	8.6	17.7	19.1	36.6	18.0	1.212	

Table 4.23 outlines ten statements in regards to the student characteristics, with the mean ranging from 3.68 to 2.92, that are ranked in descending order. The highest-ranking statement 'My previous experience with online environment helps me to use OCL' was rated at 3.68 (agree). Following this, the second statement 'Lack of knowledge when discussing a particular topic hinder my participation in using OCL environment', had a rating of 3.54 (agree). The third statement, 'My ICT skills help me to use learning environment' was also rated in agreement, with a rating of 3.49, as did the fourth statement, 'Shortcomings in my collaborative skills (i.e. writing ability) can hinder my participation using OCL environment', with a rating of 3.47 (agree). The fifth-highest ranking statement 'I need more training and guidance to adopt OCL environment' was rated at 3.44 (agree), which was similarly ranked by the sixth statement, 'I am reluctant to use OCL environment (i.e. posting on

forums/discussion boards) for fear of criticism from my peers', at a rating of 3.43 (agree). The seventh statement 'I am willing to use OCL environment during my studies and when completing a given task' also rated in agreement, with 3.41. As for the eighth statement, 'Other responsibilities hinder my participation in OCL environment', this was rated at 3.27 (neutral). Similarly, the ninth statement, 'I am aware of the importance behind collaborative learning' and the tenth statement 'I find it difficult to accept and incorporate technology when working collaboratively (Resist change)' were also rated as neutral, with ratings of 2.98 and 2.92 respectively.

4.5.2.1 *The major finding from the written open-ended responses (questionnaire) and focus group interview in relation to student characteristics*

The open-ended responses to the questionnaire and focus group interviews offered further insight into the data that emerged from the questionnaire from the participants' own experiences and opinions.

With regards to the participants' awareness, acknowledgment and values that they ascribed towards the opportunities for collaboration provided by the OCL environment, the data showed that 54% of the participants disagreed or strongly disagreed. This meant that, to a certain extent, the participants were unaware of how the process of collaboration with their peers could enhance their learning. During the focus group interviews, the learners were asked to elaborate upon this area of discussion and the questionnaire findings, to which they responded that this was indeed the case. They went on to clarify what they meant, whereby they exhibited a negative perception towards the use of the OCL setting. For instance, one participant stated, "We feel that collaboration means extra workload and it's actually a waste of time". Another student explained that there was no "clear picture" of the benefits in working together, nor did they see any point in participating during tasks. Further views were

expressed towards a lack of training, where the students thought there was no prior explanations or training in place that would introduce them to the collaborative approach. This was applicable for all stages of their education, from primary school to their first year at university, as they stated the teaching approach adopted in the Saudi educational system is often conventional, where students maintain a passive role during tasks and that they regard and rely upon their tutor as the source of knowledge and guidance.

Furthermore, a number of participants felt they did not have a real grasp over the meaning and understanding of collaboration, nor did they truly acknowledge the value of adopting this approach. One participant stated, "There needs to be clear expectations from instructors". Another student remarked that students need to know "what they're expected to get out of this process and have a clearly defined assessment strategy." In relation to the participants' willingness to share knowledge or workload during the collaboration of an assigned task within an online setting, the data from the questionnaire revealed that 48% of the participants strongly agreed/agreed that they would be willing to use the OCL environment for this purpose. Students were given the opportunity to explain and elaborate upon this in the open-ended responses and focus group interviews, and while they felt this result reflected the current situation, some highlighted potential reasons why they thought participants would not be willing to share knowledge. One reason that many of them gave was due to the learning approaches that they have experienced throughout their lifetimes, which encouraged them to be highly competitive with their peers and that the primary focus of their studies should be on passing examination. As a result, this caused them to view the collaborative approach as counter-intuitive. For instance, one participant stated succinctly, "we inherit the competitive mentality from our previous education".

In expounding upon the 69% of participants who strongly agreed/agreed that a learner's previous experience in using an online environment influenced their handling of the

OCL environment, students stated that their experience gave them a good grasp of this setting, as they were familiar with the various components that were available in it. Moreover, with regards to the responses given to the statement that ICT skills can help learners to use the OCL environment more effectively, the findings revealed that 54% of the participants strongly agreed/agreed. When expanding upon this during the open-ended responses and focus group interviews, their sentiments were also in agreement with the results, with statements such as, "proficiency in ICT has helped me in dealing with the features within the LMS more easily". They also felt that the competency levels in ICT skills could be acquired and enhanced through training and online courses. Thus, the participants expressed a positive relationship between the effective use of the OCL environment and proficiency in ICT competency. In contrast, they also felt that students with limited skills in using ICT would only use a limited number of tools and functions within the LMS, which would subsequently limit their learning capacity in this setting.

When the participants were asked to respond to the statement that external responsibilities could impact upon their opportunities to engage in collaborative activities, the results indicated that 37% agreed with this. The open-ended responses and focus group interviews provided further insight into these findings, where the participants concurred that different schedules of peer groups and heavy workloads were real challenges that they must face, subsequently leading them to have less time to adopt these new learning approaches: "Working in a group means we are dependent on all our group members. This means their messages, communication and timings are all important when we complete tasks together". Thus, the students concluded that if the OCL environment is to be implemented successfully, other responsibilities that may impede upon collaboration with peer groups needs to be seriously considered. They further noted that this imbalance in levels of commitment and

responsibility amongst group members should be addressed. For instance, one participant stated, "you need to free up your time to make it suitable for the rest of the group members".

In expounding upon the 54% of respondents who disagreed/strongly disagreed that they found it difficult to accept the collaborative approach, the participants from the open-ended responses and focus group interviews felt that this did reflect the current situation. They explained that students who come from a conventional learning environment were often uncomfortable with change, and that this level of reluctance towards collaborative group work was due to not acknowledging or valuing such an approach, and as a result of negative past experiences in this area. The open-ended responses and the focus group interviews also enabled this study to address whether the learners felt their shortcomings in collaborative skills (i.e. writing ability) could hinder their participation using the OCL setting. With 55% of respondents agreeing/strongly agreeing with this statement in the questionnaire, those in the focus group interviews concurred that this reflected the current situation. This related to certain shortcomings from the individuals themselves, such as interpersonal and communication skills, confidence issues and language ability, where they felt these would hinder how they use the OCL environment. One participant stated, "Working with individuals whose knowledge levels are higher than mine, making me feel less confident".

Moreover, many of the participants felt their writing ability in particular was an area they would like to improve, as this was a cause for them not to be active online during collaborative tasks and discussions. For instance, one participant stated, "when you post online, sometimes you need speed when using the keyboard", whilst another expressed "fear of spelling mistakes" and a need to "choose the appropriate phrases". Another area that arose in terms of perceived shortcomings were issues pertaining to general etiquette when collaborating online, which was a source of frustration for some of the participants. One aspect of this referred to how individuals should behave with their peers online: "The thing I

do not like about group discussion are dominant individuals, who only consider their point of views and dismiss everyone else's opinions".Conversely, concerns also related to negotiating compromise with one another and in reaching consensus, as a participant stated, "The factor of friendship is very important for me and I prefer not to work with people who I am not friends with", as well as "We miss the etiquette of how to manage a discussion and in taking turns to speak".

Another aspect was the challenge of having different levels of knowledge within a group. In light of this, when the researchers asked the focus groups whether they felt the 59% of those who agreed that a lack of knowledge during a collaborative discussion hindered their participation in using the OCL environment, those in the focus group agreed that this was the case. Additionally, while the questionnaire found 50% of participants agreed that they are reluctant to use the OCL environment for fear of criticism from their peers, the respondents from the focus group interviews concurred, where one stated, "Some students avoid participation so as not to be exposed to criticism and ridicule by some of his colleagues, and prefer just to listen". When addressing the participants' need for more training and guidance to effectively adopt the OCL environment, 57% of those answering the questionnaire agreed that this was the case with OCL. To clarify this response, the open-ended question and focus group interviews provided further insight into this result, as the researcher asked the participants whether this was the case in the current context, to which they agreed that it was. They stated that guidance and training should be made available on how to collaborate with others, as it would help them interact more positively and provide a greater impact on the use of the OCL setting.

In summary of the responses given to the student characteristics factor, the open-ended questionnaire and focus group interviews showed that the participants' unawareness in valuing or acknowledging the importance of the OCL environment hindered the effective use

of this type of setting. Moreover, they explained how their competitive mentality, as a result of the traditional learning approaches they experienced during their earlier stages of education, caused them to exhibit an unwillingness to share knowledge and collaborate with their peers. Furthermore, the participants were in agreement that a proficiency in ICT skills would help them in how they handled the OCL setting, while the focus group interviews also showed that the learners' external responsibilities could hinder their opportunities to collaborate during activities. As for the learners' shortcomings, the findings revealed that this could impact on how the learners participated in the OCL setting, which was as a result of fear in getting something wrong and being criticised or ridiculed, or due to a lack of respect from their peers; this was also the case for those who felt there were different levels of knowledge within their group. Furthermore, the focus group interviews concurred with the questionnaire findings, in that the learners felt training and guidance would help them effectively adopt the OCL environment.

4.5.3 The third question/tutors' role

What are the tutor's roles, which may influence the effective use of the OCL environment from the students' experience?

Table 4.24 *The tutor's role factor*

Rank	Items	Fre / %	S. agree	Agree	Neutral	Disagree	S. disagree	Mean / Std.d	Items No
1	The tutor's ICT skills and competency in using LMS tools	F	159	246	96	152	76	**3.46**	25
		%	21.8	33.7	13.2	20.9	10.4	1.308	
2	The tutor's attitude towards collaborative learning	F	146	229	102	175	77	**3.43**	18
		%	20.0	31.4	14.0	24.0	10.6	1.308	
3	Feedback	F	137	218	98	204	72	**3.42**	26
		%	18.8	29.9	13.4	28.0	9.9	1.300	
4	The tutor actively cultivates a warm and friendly OCL environment	F	123	208	123	183	92	**3.12**	24
		%	16.9	28.5	16.9	25.1	12.6	1.305	
5	The tutor motivates and encourages me to contribute in collaborative tasks using OCL	F	107	161	146	224	91	**2.96**	23
		%	14.7	22.1	20.0	30.7	12.5	1.271	
6	The tutor assigns clear and appropriate objectives	F	98	151	117	259	104	**2.48**	19
		%	13.4	20.7	16.0	35.5	14.3	1.238	

7	The tutor provides adequate and appropriate support and guidance	F	77	119	143	263	127	**2.44**	20
		%	10.6	16.3	19.6	36.1	17.4	1.238	
8	The tutor actively promotes teamwork in the OCL environment	F	58	98	187	254	132	**2.43**	22
		%	8.0	13.4	25.7	34.8	18.1	1.163	
9	The tutor monitors and facilitates the collaborative tasks	F	62	113	145	268	141	**2.39**	21
		%	8.5	15.5	19.9	36.8	19.3	1.206	

Table 4.24 provides the nine statements with regards to the tutors' role, which range from 3.46 to 2.39 and are ranked in descending order. As a result, the first ranked statement was 'The tutor's ICT skills and competency in using LMS tools', with a score of 3.48 (agree). The second statement, 'The tutor's attitude towards collaborative approach within online setting influences whether I use it' was rated at 3.43 (agree), while the third statement 'the tutor feedback influence my I use online environment' rated a similar score of 3.42 (agree). As for the fourth statement, 'The tutor actively cultivates a warm and friendly OCL environment to alleviate any anxiety, this was scored at 3.12 (neutral), followed by the fifth statement, 'The tutor motivates and encourages me to contribute in collaborative tasks within an online environment' with a rating of 2.96 (neutral). The remaining statements all rated as "disagree", starting with the sixth statement, 'The tutor assigns clear and appropriate objectives' with a score of 2.48 (disagree). Similarly, the seventh statement, 'The tutor provides adequate and appropriate support and guidance when using OCL environment, rated at 2.44 (disagree), which was followed closely by the eight statement 'The tutor actively promotes teamwork in the OCL environment' at a rating of 2.43 (disagree). Lastly, the ninth statement, 'The tutor monitors and facilitates the collaborative tasks using OCL, without directly interfering or encroaching upon the discussion was rated at 2.39 (disagree).

4.5.3.1 *The major findings of written open-ended responses (questionnaire) and focus groups*

The open-ended responses to the questionnaire and focus group interviews provided a greater insight into the participants' views over the role of the tutor and how this influences their experience and use of the OCL environment. With regards to the tutors' attitudes towards the OCL environment and how their understanding of this environment may benefit their learners, 51% of the participants agreed that their tutor's attitude had an influence over whether they would use this type of setting. When asked to respond to this during the focus group interviews and from the open-ended questionnaire, the participants affirmed that this was the case. That is, they felt that when their tutor had a positive attitude in terms of advocating the use of the collaborative approach in an online setting, it would have a knock-on effect on them, and they would be more inclined to use it also. The participants further expressed the importance of the tutors' role and how their attitude towards this setting was equally important to the actual technology that was being implemented.

When addressing the statement that the tutors assigned clear and appropriate objectives towards tasks and group activities in order to improve the learning experience, 50% disagreed with this, stating that their tutors did not provide such objectives. Similarly, in response to the statement that their tutor provided adequate and appropriate support when using the OCL environment, 54% of the participants also disagreed with this. They felt if the tutor provided clear guidelines and instructions during collaborative tasks, it would maximise their learning experience and be more effective in terms of how the OCL environment was used.

Moreover, with regards to the statement that their tutors monitored and facilitated their collaborative tasks without interfering in the discussion, 56% disagreed that this was the case, as the students highlighted that, although their tutor implemented an online environment, they continued to adopt the direct teaching method. Additionally, 53% of the participants also disagreed with the statement that their tutors actively promoted teamwork. In elaborating

upon this, the participants felt that this promotion of teamwork was superficial. They also expressed how important this aspect was within the online collaborative setting, as it would help to prevent any unnecessary criticism or mocking from peers.

Furthermore, in response to the statement that their tutor motivated and would encourage them to continue to collaborative tasks by using the OCL environment, 43% disagreed that this was taking place. The participants further expressed their views concerning this, as they noted the tutor did not acknowledge group members who were inactive during collaborative tasks. While motivating learners is important, cultivating a warm and friendly atmosphere within the OCL environment was also deemed as vital. Thus, when responding to the statement that the tutor actively cultivates a warm and friendly OCL environment, 45% agreed with this, wherein they felt this was an effective method of alleviating anxiety and helped to create a place of trust, respect and support.

The open-ended responses and focus group interviews also provided further insight into the importance behind the tutor's ICT skills and competency in using the LMS, in which 55% of the participants agreed with the questionnaire statement that these were vital to alleviate frustration during learning. The participants felt that if the tutor could show them the full capability and control of the features within the LMS, it would encourage them to feel more comfortable in using it. As for the statement that prompt feedback from the tutor is vital to help the learners use the OCL environment, 49% agreed that this was currently taking place. The participants explained that getting feedback from their tutors was necessary as it provided them with clearer guidelines and an understanding of what the tutor wants from them. Moreover, it helped to keep the learners motivated and provided them with necessary information on how they can improve their work. Some students, however, felt that the lines of communication were not always maintained.

In summarising the tutor roles that influence the effective use of the OCL environment, the participants provided detailed insight into what aspects would hinder or support how they experienced this setting. In discussing the tutor's attitude in terms of acknowledging and valuing the importance of the OCL environment as a positive influence on their students' learning and experience, the learners agreed that tutors should exhibit such attitudes, even though this was not necessarily present in all cases within the current context. This highlights just how vital this aspect is in influencing how the students adopt this approach. Additionally, in response to whether their tutors provided clear and appropriate objectives when using the OCL environment, the participants stated that, to a certain extent, their tutors did not provide such guidelines and, subsequently, this could hinder their experience and implementation in this type of setting. Furthermore, in terms of the level of support and appropriate guidance provided by the tutors in this context, the participants felt this was relatively inadequate; the necessary support was not given, resulting in a negative experience with the OCL environment. Another aspect of the tutor roles that was addressed was whether they monitor and facilitate the collaborative tasks of their learners without interfering directly. With regards to this, the participants felt this was not the case, to a degree, and that the tutor's direct involvement also had the potential to hinder the effective implementation of the OCL environment. The tutor's responsibility to promote teamwork during the collaborative tasks was also criticised by the participants; they felt that their tutors did not actively encourage this, while also expressing a certain level of criticism over their lack of motivation and encouragement in contributing toward tasks within the OCL setting. Both these aspects were regarded as clear areas that could hinder the effective use of the OCL environment. In terms of expressing their experiences over how vital the competency levels and ICT skills of tutors were when using the LMS, the participants agreed that this was highly important. Lastly, when addressing the influence that their tutor's feedback had on

their level of participation in the OCL environment, the participants were in agreement that this would improve how they adopted this type of setting.

4.5.4 The fourth question/the course characteristics

The course characteristics play a vital role in influencing the collaborative learning approach within an online environment. Course tasks and activities should therefore provide learners with an opportunity to put forth their ideas, encourage the students to engage with one another and also enable them to access and refer back to previous knowledge.

The fourth sub-question in this study focused on the course characteristics, it asked: From the students' experience, *to what extent do the course characteristics influence the effective use of the OCL environment?*

Table 4.25 *The course characteristics*

Rank	Items	Fre / %	S. agree	Agree	Neutral	Disagree	S. disagree	Mean / Std.d	Items No
1	The type of task (i.e. debate, discussion) encourages me and influences the level of participation and collaboration.	F	165	293	126	107	38	**3.60**	28
		%	22.6	40.2	17.3	14.7	5.2	1.140	
2	Sufficient time	F	154	310	92	122	51	**3.54**	33
		%	21.1	42.5	12.6	16.7	7.0	1.195	
3	The organisation and structure of the task encourages me to participate	F	153	282	122	129	43	**3.51**	27
		%	21.0	38.7	16.7	17.7	5.9	1.174	
4	The homogeny within a group helps develop and encourage my effective participation	F	147	291	101	138	52	**3.47**	32
		%	20.2	39.9	13.9	18.9	7.1	1.209	
5	Knowing my group members will encourage me to participate in OCL	F	145	296	93	139	56	**3.46**	31
		%	19.9	40.6	12.8	19.1	7.7	1.221	
6	From my experience in using OCL, smaller group size (4-5 individuals) is more suitable for effective participation	F	98	151	117	259	104	**3.41**	30
		%	13.4	20.7	16.0	35.5	14.3	1.208	
7	Assessment	F	109	189	182	177	72	**3.12**	34
		%	15.0	25.9	25.0	24.3	9.9	1.218	
8	There are a balanced of distribution the tasks between the group members and Individual accountability helped me to participate	F	65	148	136	259	121	**2.39**	29
		%	8.9	20.3	18.7	35.5	16.6	1.220	

As illustrated in Table 4.25, eight statements were asked regarding course characteristics, ranging from a score of 3.60 to 2.39. In light of this, the first six statements were all in agreement, which were ranked as follows: The first ranked statement was 'The type of task (i.e. debate, discussion) encourages me and influences the level of participation and collaboration', with a score of 3.60 (agree). After this, the second ranked statement scored 3.54 (agree), 'Sufficient time' which was followed by the statement 'The organisation and structure of the task encourages me to participate collaboratively', which had a score of 3.51 (agree). Similarly, the fourth statement 'The homogeny within a group helps develop and encourage my effective participation' scored 3.47 (agree), followed closely by the fifth statement 'Knowing my group members will encourage me to participate in OCL' with a score of 3.46 (agree). The sixth statement was scored at 3.41 (agree), which was 'smaller group size (4-5 individuals) is more suitable for effective participation'.

With regards to the seventh statement, which was, 'I only use the OCL environment because it is assessed', this received a score of 3.12 (neutral), whereas the final ranked statement received a score of 2.39 (disagree), which stated, 'There are a balanced distribution of the tasks between the group members and individual accountability helped me to participate'.

As highlighted, the significance behind the nature and design processes of collaborative tasks is imperative, as the overall success for the OCL environment is dependent upon it. Moreover, the motivation of a student in engaging collaboratively is often proportional to their level of interest in a particular group topic. As a result, the course should be designed to incorporate learner-centred strategies.

4.5.4.1 *The major findings of written open-ended responses (questionnaire) and focus groups*

The open-ended responses to the questionnaire and focus group interviews provided further insight into the participants' views over the course characteristics and how this can affect their experience in using the OCL environment. With regards to the organisation and structure of the collaborative tasks and how they encouraged the learners to participate collaboratively, 60% of the participants stated they agreed that this was the case. The majority of those in the focus groups also agreed upon this, which highlights that if the tasks are organised appropriately by the tutor, it would help them. They also expressed a concern that if tasks were not structured correctly, then it could become an overload of information for them. As for the statement that the different types of tasks encourage and influence the learners to participate and collaborate with their peers, 53% agreed with this. From the focus group interviews, the participants also agreed that this was an effective method of increasing their levels of participation, as different tasks, such as debating and discussion would suit different people and could therefore cater for all the members of the group.

When responding to the statement that, during the distribution of tasks, there is a balance between all group members and that individual accountability helped them to participate, 52% agreed that this was the case. However, during the focus group interviews, the participants explained that there were many difficulties with group organisations. One member stated that is difficult to coordinate all the group members and that each member has a different style of how they work. For instance, one group member may complete all their work weeks in advance, whilst others prefer to leave it to the last minute; this makes it difficult to collaborate and put the tasks together as everyone is working to different schedules. Moreover, the participants highlighted the issue of "free riders", expressing a great deal of negative criticism towards them: "I found group work sometimes to be unfair, because some people tend to completely rely on others for accomplishing the whole task, with minimum or zero contribution from other members in the group". These statements

showed that the imbalance in their peers' level of commitment, effort and responsibility to the task was an issue that needed addressing. This also led to participants having to do more work and creating frustration: "Working with some individuals who do not participate in tasks and leave all the work for one person to complete makes me very annoyed and frustrated".

In response to the statement that from their experience in using the OCL environment, the participants felt smaller group sizes (4-5 individuals) would be more suitable for effective participation. However, during the focus group interviews and responses to the open ended questions, the overall attitude towards this statement (and by extension, group sizes), was that they agreed that smaller group sizes were better when it came to fostering an environment for effective participation. With regards to the statement that if the participants knew their other group members, it would encourage them to participate in the OCL environment, 60% of the participants agreed that this was the case. This was also found in the focus group interviews and in the open-ended questions, where many felt it was a positive thing as they were more comfortable around them and knew each others' strengths and weaknesses. Moreover, the participants expressed that they could trust their group members, particularly when it came to completing tasks. As for the statement that the homogeneity within a group will help the participants develop and encourage effective participation, 60% agreed with this. The responses from the focus group interviews and open-ended questions also affirmed this, where the participants felt the freedom to have personal control in forming their own groups and in the tasks they choose, it would be beneficial and create a more positive environment amongst the group members.

In response to the statement that if the participants have sufficient time to complete the collaborative learning tasks, they will do it a good standard, 63% agreed that this was the case. The response from the focus group interviews and open-ended questions also affirmed

this, and that the nature of tasks means they deserve to be given enough time to complete. Lastly, with regards to the statement that the influences of assessment in using the OCL environment, 40% responded in agreement to this. The focus group interviews and open-ended questions, however, provided further insight into this area, as they expressed their concern primarily over the assessment process itself. That is, they felt that this process was unclear during collaborative tasks, as they were unsure about how they were going to be assessed (i.e. was the assessment going to be made on the end product, how the group worked together or on individual contribution, etc.). For instance, the participants expressed their frustration over the focus only on the end product of a task, and not taking individual participation during a task into account. As a result, if the assessment is only to be made on the final product, they felt it was easier for other individuals within the group to take advantage of this.

In summarising the course characteristics that influence the effective use of the OCL environment from the students' experiences, a number of key areas have been explored. Thus, when the participants were asked to give their experience in relation to the organisation and structure of a task can motivate them to collaborate effectively; they agreed that this was the case. Similar findings were also made in terms of the students' experiences over the type of task that was given and how this would influence their level of participation and collaboration, whereby those tasks that involved interaction could have a positive consequence over the effective use of the OCL environment. Another aspect of the course characteristics that was addressed by the participants was over the current balance of distribution for collaborative tasks amongst the group members, which in turn created individual accountability, encouraged the learners to increase their levels of participation and showed that they value their group members. However, in the current context, the participants disagreed with this and felt this was not the case. This was also linked to another

aspect of the course characteristics, which was in relation to the size of the group. For this, the participants felt that smaller group sizes would be more effective for participation and more suited for the OCL environment. The participants also agreed that having familiarity of other group members would also motivate and support them to participate using this type of setting. This was also the case for the respondents who felt having homogeny within the groups would help them develop their level of participation. Moreover, when exploring whether the participants felt a task within the OCL environment should be given sufficient time to complete, they stated that this was necessary. Lastly, in relation to the assessment of the learners' contribution within this type of setting, the participants responded neutrally, neither agreeing nor disagreeing. Their reasoning for this was because the assessment process was quite unclear for them, as they questioned how participation and engagement during a task could be graded fairly.

This chapter began by providing the findings of this study from the quantitative and qualitative analysis of the data. This analysis shows the results for the factors influencing the effective use of the collaborative approach within an online environment, which were defined in previous chapters. These factors were the technology related factors, students' characteristics, tutors' roles and the course characteristics. The next chapter will subsequently discuss these findings in light of the existing literature.

5 Chapter Five: Discussion

5.1 Introduction

The aim of this research was to identify factors influencing the effective use of the online collaborative learning environment, as experienced by Saudi male undergraduate students. The learning experience within an OCL setting is significant because it enables learners to develop their critical thinking skills, self-reflection and build their own knowledge (Palloff & Pratt, 2005). It provides the learner with an environment that encourages interaction and collaboration with their peers, which in turn, can play a vital role in enhancing learning outcomes. In light of this, the students' experiences are therefore essential in order to develop instructions that can improve the quality of the learning process (Dewiyanti et al. 2007).

This explanatory study has been conducted to acquire a response from undergraduate Saudi male distance learners on their experiences of collaborative learning within online environments, and attempts to gain an understanding of the crucial aspects affecting learning in this environment. This chapter therefore focuses on discussing the results that were gained from the administered questionnaires, along with the focus group interviews elaborating upon the questionnaire responses. It seeks to draw upon these findings in light of the study's context and the literature review.

In terms of the overall structure of this chapter, it follows the format of the preceding chapter, which provided a detailed insight into the major findings of this study along with a data analysis that was adopted for this research. This chapter subsequently reflects upon the results from a quantitative and qualitative analysis of the data. The factors that are specifically addressed are those related to technology, student characteristics, tutors' roles and the course characteristics.

To explore these influential factors in further detail, this study was guided by four sub-questions that were asked in order to fulfil the objective of this research:

1) To what extent does the existing infrastructure and LMS provide a reliable platform in facilitating the collaborative approach within an online environment from the students' experience?

2) What are the students' characteristics that may influence the collaborative approach to occur within the existing online environment?

3) What are the tutors' roles that may influence the effective use of the collaborative approach within an online environment from the students' experience?

4) From the students' experience, to what extent do the course characteristics influence the effective use of the collaborative approach within an online environment?

Subsequently, this chapter begins by discussing the correlations of demographic variables in relation to the aforementioned factors (i.e. technology related factors, student characteristics, tutors' roles and the course characteristics). The chapter then seeks to answer and discuss the four sub-questions in consecutive order, basing the discussion both upon the findings that emerged from the questionnaires and the focus group interviews and in light of the literature.

5.2 Correlation of demographic variables with the identified factors

This section seeks to illustrate what effects the selected demographic variables have on the aforementioned factors, in light of the learners' experience within the OCL environment. The variables considered were the participants' type of enrolment (i.e. full-time/part-time), their age, their ICT skills, their previous experience within the OCL environment, whether they have previously received LMS training and, also, the current situation with regards to how many times the collaborative approach has been used within an online environment in KAU.

The results verified that the type of enrolment had a significant influence over the

student characteristics factor, revealing that those who enrolled as a full-time student had a positive influence on how the OCL environment was used. This also highlighted that those enrolled as part-time students hindered how the OCL environment was implemented relatively speaking. These results are consistent with those of Kember (1999), who found that part-time distance learners encountered various challenges that would conflict with how they could use the OCL environment effectively, such as social, work and family commitments. The findings additionally showed that there were significant statistical differences between the age groups in relation to the student characteristics, indicating that age has an effect on the student characteristics. These results are in line with Alanazy (2011), who found that younger learners were seen to have a marginally higher positive attitude in terms of using an online environment, in comparison with older learners.

Furthermore, in relation to the ICT skills, possessing fluency was found to be a critical competency within this environment (Dabbagh & Bannan-Ritland, 2005). A difference was also found between the categories of ICT skills with regards to the technology related factor. These findings are in line with Koo (2008), whereby those with more experience with using ICT caused a positive experience. This research incorporated surveys to examine the use of online collaborative learning within an educational environment, based on a case study in Malaysia. A study by Dutton et al. (2002) has also underlined the need for the students to attain a specific level of computer competency while working in an online environment. In contrast, those who possess a lower level of technological competency would inculcate a fear towards working in an online environment (Piotrowski & Vadonovich, 2000). Thus, according to Lim (2001), computer competency provides a fair idea of how students will cope with online courses.

As for the participants' previous experience within the OCL environment, there were

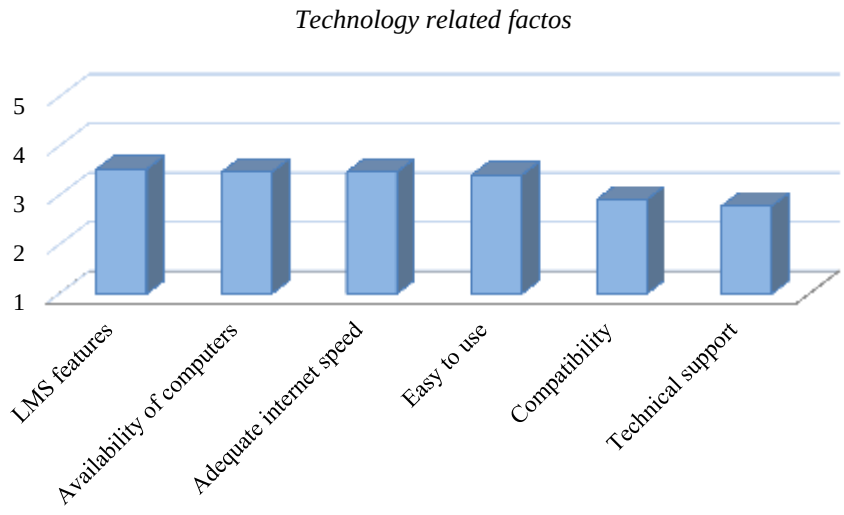
significant statistical differences in relation to student characteristics, which are contrary to the findings of the study by Alanazy (2011), who saw that previous experience of using online courses made no difference in influencing their adopting and performance in using the online environment. In terms of being trained in using LMS, the results indicated that there were significant differences between the two categories (i.e. yes/no). However, similar to Lai et al. (2012), for those that responded affirmatively in receiving LMS training, they had a positive attitude towards OCL and in using technology. Lastly, in terms of the current situation of how many times the collaborative approach has been used within an online environment in KAU, the results showed that there was a significant difference found between how often OCL was used in the current situation with regards to the technology related factor. This showed that there was a significant difference found between how often OCL was used in the current situation at KAU in relation to student characteristics.

5.3 The first question: Technology related factors

In terms of providing appropriate and adequate infrastructure to offer a reliable OCL setting, the theme of technology related factors is vital to this study. For instance, the advancement and accessibility of the LMS, Internet speed and overall infrastructure are all primary factors that can influence online learning (Philson, 1999; Porcaro, 2011; Koo, 2008). Thus, it is crucial to ensure these factors are maintained and seek to meet the users' needs, as well as affirming this technology has the capability to provide learners with the necessary tools that subsequently support and implement an effective OCL environment (Lipponen, 1999). In light of this, the first sub-question in this study focused on the technology related factors, which asked the following question: *'To what extent does the existing infrastructure and the LMS provide a reliable platform in facilitating online collaborative learning from the*

students' experience?' One may note that this question is concerned with aspects pertaining to technology, where it seeks to assess whether this is an appropriate and adequate infrastructure, in providing a reliable online collaborative learning environment.

Figure 5.1 Technology related factors



With respect to the findings in this study, the group of items that were found in relation to technology related factors are presented in Figure 5.1. This figure has been extracted from the data in Table 4.22 and presented in a column chart format. What follows in this section is a detailed discussion of these items.

The findings revealed that the participants agreed with the statement that declared the availability of computers to access the LMS was appropriate and adequate. This finding is supported by previous research, in which the accessibility, availability and necessary maintenance of relevant technological equipment, such as computers and Internet to access the LMS, are crucial in ensuring the OCL environment is implemented effectively (Gan, 2001; Peeraer & Van Petegem, 2010; O'Neill, 2011). Agreeing, though expressing this in opposite terms, Buabeng-Andoh (2012) explain that having an insufficient or inadequate equipment and infrastructure can have a negative effect towards the implementation of technology, thereby causing a hindrance to how OCL environment is used effectively.

In addition, the open-ended responses and focus group interviews provided further elaboration, where participants expressed that the availability of computers to access the LMS is not necessarily an issue; pertaining to this factor they expressed a common sentiment of being able to afford a computer. This however, contradicts Aljuwaiber's (2009) study, who found that this factor of socio-economics and being able to afford computers was one of the significant limitations for families.

Furthermore, despite the participants' agreement with the statement that the Internet speed was adequate (Figure 5.1), some of the findings from the open-ended responses and focus groups interviews were in slight opposition to this view. That is, certain objections were made towards having adequate Internet speed, as slow Internet connections and intermittent access to the Internet were regarded as two of the main issues with Saudi Internet providers. Many of the issues relating to Internet speed arose due to having a low bandwidth. This means learners are unable to open the LMS and access the course materials until it is fully loaded. This can be a cause of frustration amongst the learners, as they often see a "loading…" status for a long period of time, and consequently logout when it does not proceed further. Such findings confirm what has been stated in previous studies, which shows that there are a number of limitations with regards to the use of Internet in the higher education system of Saudi (Al-Fulih, 2002; Al-Wehaibi et al., 2008). More specifically, Alaugab (2007) found this was related to issues pertaining to accessibility, including limitations of Internet access and adequate speed.

It is therefore imperative that learners are equipped with high Internet speed and a dependable service, which is often available via broadband connections, as it is necessary for learners to access large files within the LMS and to stream relevant videos within the course modules. With regards to this, it can become highly problematic if students are using a slow

or limited Internet connection (i.e. a dial-up connection), as it can hinder their use of the OCL environment (Koo et al., 2005).

As highlighted in the results chapter, the use of various devices to access online environments has become common practice among the learners. The current study found that the participants responded impartially towards the statement that the LMS is compatible with various devices. Nevertheless, the open-ended questions and the focus group interviews provided further insight into these findings, highlighting a number of difficulties that the participants had when using LMS on other devices. One major aspect of this was that the LMS required the users to download supporting software and plugins in order to use it correctly on devices such as tablets and smart/phones. By not having these plugins downloaded, the LMS would not function accordingly for the user and they would not be able to interact effectively with the LMS. Examples of this were expressed in the results; such as users who were unable to access the LMS due to a need to download supporting software, or other learners who were using older web browsers that were not supported by LMS. Such instances illustrate how the Internet browser that is used to operate LMS must possess certain requirements and capabilities to be suitable in fulfilling this particular objective. That is, if the LMS is incompatible with the browser, it means the learners will not be able to access the course content.

To resolve such issues, there should be no compatibility issues with the LMS and commonly used web browsers such as Google Chrome, Apple Safari, Internet Explorer and Mozilla Firefox. Furthermore, as highlighted in the results, a criticism of the LMS structure and layout were that they are not regarded as “mobile” friendly. These findings are supported by Ayub et al. (2010), who state that the overall design of the LMS must be appropriate for the user so they do not encounter any major difficulties.

To facilitate the users in having a positive experience of the LMS, it is crucial that the design and layout is made as easy as possible for users to navigate and interact with. The overall design and navigation of the LMS interface is another vital aspect to ensure the LMS is appropriate and adequate for learners' use (Ghoniemy & Fahmy 2010). The results pertaining to this subsequently support what has been found in previous studies, whereby the participants agreed that the LMS was easy to use and that they had no problems navigating through it. In addition, within the open-ended questions and from the focus group interviews, a number of participants stated that the LMS became easier to use once they became more familiar with it. Therefore, the study of interface design for online applications can be seen to have undergone much research, ranging from technical aspects (Volery & Lord, 2000) to the artistic elements of design (Laurel, 2014). However, Arias et al. (2015) combined both of these to determine the more important element for any online user interface, which is whether it is easy to use and navigate. Thus, Internet navigation and the usefulness of online technology both have the ability to influence the overall experience of the user (Ramakrisnan et al., 2012), which Kerka (1999) found to be one of the determining factors for an effective OCL implementation.

In addition, to enable collaboration amongst group members, each member should have a means to interact with one another using a synchronous and/or asynchronous method of communication. This means the flexibility that is offered through a diverse number of collaborative tools within the LMS can allow learners to interact more effectively with their peers and tutor. The results of this study indicate that the participants agreed with the statement, which declared that the collaborative features within the LMS exist. These results are in line with Koper and Tattersall's (2005) study, who found that the presence of such tools are vital in fostering effective involvement amongst the students themselves and with their tutors. This finding further supports the view of McIntyre and Wolff (1998), in which

the variety in medium richness provides a convenience to the learners, in that it focuses on interactivity amongst the group members and allows them to interact with one another through a number of different methods and/or using various elements (i.e. audio, text or video). Bonk and King (1995) cited in Bishop (2008, p. 415) also explain that this can subsequently "change the way students and instructors interact, enhance collaborative learning opportunities, facilitate class discussion, and more writing from solitary to more active, social learning". In light of this, interactivity can become a key factor that influences the implementation of collaborative learning within an online environment. Thus, as mentioned in Menchaca and Bekele's (2008) study, the participants would often highlight the importance of having collaborative discussions within their groups, which was achieved through a variety of collaborative tools that allowed them to comment, critique and provide suggestions to their peers' work.

In terms of influencing the learners to accept technology in their academic studies, one of the key factors that may support learners to do this is the availability of immediate and adequate technical support (Hart, 2012), particularly during the primary stage when learners use or adopt such technology. In response to the statement of whether or not the participants received immediate and adequate support when they encountered a problem with LMS, the findings revealed negative sentiments towards this, wherein a considerable amount of those from the focus group interviews and open-ended questions had negative perceptions towards technical support. Much of this was due to the overall availability of the technical team, as well as their response time when an incident was raised with them. This was the source of justified frustration on the part of the learners, particularly if they were unable to access the LMS during the timescale within a lecture.

Moreover, the learners felt that even if the technical team responded in adequate time, the level of support they provided was also a concern, where some also felt the technical team

would occasionally find it difficult to grasp what the problem was in order to resolve it. In light of this, the participants stated that if they had the necessary support and were confident in the support they were given when using the LMS, they would not hesitate to use it. Conversely, another perspective given by the participants was that the blame should not lie solely with the technical team, as the user is also responsible for how they explain the problem fully. Thus, a balance between the technical support team and the user should be made, where learners consider their workload, while the technical team should consider the learners' circumstances and technical ability (or lack thereof).

To summarise this section, the first question sought to discuss the aspects pertaining to technology, where it sought to assess whether this is an appropriate and adequate infrastructure for providing a reliable online collaborative learning environment. Within this factor, the availability of computers was explored, where the participants felt that this was adequate and appropriate, and did not cause any hindrance in accessing a reliable platform to use the OCL environment. Furthermore, the Internet speed was an area of discussion in this study, of which the participants held opposing views concerning it. Analysis of the quantitative data showed that the participants agreed that the Internet speed was adequate, however the qualitative data analysis showed there were a number of concerns by the participants, who felt it could cause a hindrance in accessing the LMS accordingly. In terms of the LMS being accessible on various devices, the participants rejected the notion that the LMS was adequate on such devices, citing compatibility issues as the overall problem in hindering the effective use of OCL and collaborative learning. In contrast, the learners confirmed the existence, availability and diversity of OCL tools within the LMS for the purpose of collaboration, indicating that these tools provided a reliable environment. With regards to the availability of immediate and adequate technical support, it was clear that this

was a hindrance to the effective use of this environment, as expressed by the participants concerning this issue.

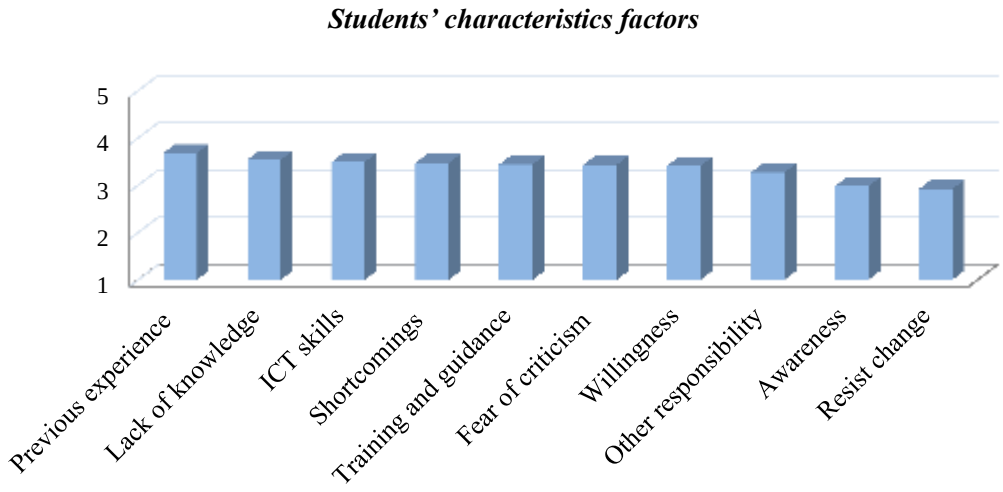
5.4 The second question: Student characteristics

The identification of student characteristics in relation to the effectiveness of implementing the OCL environment is vital for success (Zhu et al., 2009; Wojciechowski & Palmer, 2005), which is what the second question in this study focuses on this theme. The question that is therefore asked is:

What are the student characteristics that may encourage or hinder the collaborative learning approach to occur within the existing online environment?

A variety of these characteristics have been highlighted in existing literature, including an awareness of the importance behind collaborative learning, and acknowledging and valuing the opportunities presented by the OCL environment, a willingness to use an OCL environment, previous experience with OCL settings, considering external responsibilities, having a lack of knowledge on certain course topics, understanding any shortcomings in their own ability to collaborate, fear of criticism when using an online environment, and a need for training and guidance in order to adopt the OCL setting effectively (Soong et al., 2001; Usart et al., 2011; Dabbagh, 2007; Lammintakanen & Rissanen, 2005). These factors have the potential to collectively influence the effectiveness in using the OCL environment. However, with respect to the findings in this study, the group of items that were found in relation to the student characteristics factors have been presented in Figure 5.2. This figure has been extracted from the data in Table 4.23 and is presented in a column chart format; a detailed description of these factors will be provided.

Figure 5.2 Students' characteristics factors



In order to promote effective collaboration and to enhance their learning experience, learners need to acknowledge and value the opportunities presented by the OCL setting. However, in this study, the responses made by the students concerning their awareness of the values and opportunities provided by the OCL environment found that, to a certain extent, the students were not aware of these values and opportunities. Considering the context of this study, this could be supported by the findings from Al-Keaid (2004) and Al-Ismaiel (2013), who show that learners in Saudi Arabia that engaged in conventional learning environments (in all levels of education) maintained a passive role and that they viewed the teacher to be wholly responsible for the learning process, as well as considering them to be the only source of knowledge.

In addition, while there are a number of learners who are inclined towards collaborating with their peers, there are others who will only do so if they are made aware of the benefits or the educational value in utilising such platforms (Dabbagh, 2007). This is further emphasised by De Hei et al. (2015), who found that tutors would need to convince those learners who object to using the OCL environment by informing them of its value and

overall benefits. Thus, those learners who are unaware of the advantages in adopting a collaborative approach will be less likely to implement it in their learning. Dabbagh (2007) also highlights the point that learners should have a fundamental level of appreciation and comprehension towards the collaborative learning approach, and also a need to enhance their competencies in this area.

Consequently, it is vital that students are given sufficient opportunities to collaborate and that they are taught how to work effectively in a group. Cheurprakobkit et al. (2002) found that some of the barriers that hindered student learning included inadequate skills and knowledge with regards to the use of the collaborative environment. One cannot, however, assume that learners will begin implementing this style of learning instantly; rather, there is a clear need for them to acknowledge and understand how the OCL setting can enhance their learning and recognise its usefulness, in order for them to be motivated to adopt it.

Furthermore, learners may find it difficult to take responsibility for their own learning. As a result, the OCL environment can become a useful tool for them if they can use it to provide a valuable contribution to their peers, feel that their contribution is valued and necessary, and providing that there is not a high demand or pressure placed on them to contribute (McWhah et al., 2003). However, if the learner does not regard their contribution (or collaborative learning in general) to be meaningful and valued, then they will not use it or feel the need to implement it effectively in their learning (De Hei et al, 2015). The awareness levels, therefore, may have an influence over the learners' participation in the OCL environment (Chen et al., 2015).

From the results in this study, the responses in the open-ended questions and focus group interviews highlighted a number of concerns that the participants had in relation to the aspect of awareness towards the OCL environment. It seemed that the participants felt that the term collaboration was misunderstood and not explained correctly by the tutors, who did

not provide clear guidance, vision or strategy in terms of what was expected by the learners in using this process. On the contrary, they were simply told that collaboration should happen, regardless of how this is done. This indicates that a lack of awareness towards the OCL environment might present a barrier for learners to adopt this approach. This is in contrast to the aforementioned research, which states that collaboration is more effective if the learners are aware and value the opportunities afforded by this type of setting. Moreover, it was also highlighted that much of the responsibility in providing a sense of awareness and value towards the OCL environment fell upon the tutor. With such statements expressed by the participants, it implies that they have not yet understood the overall value of the OCL setting. There is therefore a need to explain its purpose and benefits, which would be valuable prior to the start of the course and could be provided by the tutor.

In addition to awareness, the students' willingness to use an OCL environment is an essential factor in creating a positive impact towards it. As highlighted in Figure 5.2, the results indicate a neutral response from the students in terms of a willingness to use the OCL setting. This was elaborated upon in the open-ended questions and the focus group interviews, where students stated that they were not more positive about using the OCL environment due to either a lack of awareness, or because the participants had a number of negative experiences that subsequently affected their willingness to use such an environment. These findings are consistent with previous research, where the students' perceived readiness was considered to be a vital aspect in influencing the use of OCL (Koo, 2008; Xiong and So, 2010; Vonderwell and Savery, 2004). For instance, the findings in Koo's (2008) study showed that an OCL environment was not implemented effectively amongst students because, not only was it a new environment, but also due to their unwillingness to engage and use it.

Moreover, as previously discussed, collaboration amongst peers can generate a deeper understanding and allows the students to critically evaluate in an effective manner. This

means they should present their perspectives and negotiate their ideas. However, what tends to occur is a high degree of apprehension with regards to working as part of a group, or a level of hesitation in doing so. This can be due to negative experiences with group work, such as having to complete the majority of the work, dealing with disruptive or ill-behaved peers, or receiving a grade that was lower than they expected, which did not give a true reflection of their personal contribution in the group project (Brindley et al., 2009; Harasim, Hiltz, Teles, & Turoff, 1998).

Another vital influence with regards to the use of the OCL environment is the students' proficiency in ICT (Soong et al., 2001; Usart et al., 2011; Lammintakanen & Rissanen, 2005). In relation to this, Menchaca and Bekele (2008) propose that having prior experience with using an online learning environment is considered to be advantageous. Thus, the relationship between the use of the OCL setting and the level of experience in using computers is often assumed to be a positive one. For instance, students with a low level of experience and knowledge in using OCL tools will often restrict themselves to certain tools for their activities.

With regards to the responses given in this study to the statement that previous experience in using ICT can help in adopting the OCL environment, the findings indicated that the participants did agree with this and that it provided a solid foundation for them to work from (see Figure 5.2). Interestingly, this is in contrary to the study by Alanazy (2011), who found that experience in using an online environment neither hindered nor facilitated how it was used. In contrast, the findings in this research are consistent with a number of earlier studies, where experience and proficiency in using technology were a significant criterion for success in implementing the OCL environment (Lammintakanen & Rissanen, 2005; Pituch & Lee, 2006; Salter, 2005; Shih, 2006; Weaver, 2005). That is, the more experience the learner has with ICT, the greater the potential for success. This is further

supported by Wojciechowski and Palmer (2005), who assert that learners who adopt an online setting should not only be proficient in understanding the course material, but rather, they should also possess the necessary technical skills to participate effectively.

What this further implies is that those with low levels of competency in ICT would be more likely to underachieve. Additionally, Dutton et al. (2002) also highlights that individuals engaging in the OCL environment should have a certain level of competency in ICT. By not having this, it can often lead to learners becoming reluctant and anxious about working in such an environment (Piotrowski & Vadonovich, 2000), further highlighting how these factors may be interlinked.

Moreover, one may also suggest that an individual's ICT skills can have a positive impact on how they use and adopt the OCL environment. In regards to the responses given in this study to the statement that ICT skills help the learners in using the OCL environment, the findings revealed that the participants agreed with this and that it had a positive impact in this type of setting (Figure 5.2.). This is in line with the studies conducted by Dutton et al. (2002) and Halsne and Gratta (2002), which have shown that students need to have a certain level of competency in ICT skills if they are to be effective when using an online environment. That said, what has also been noted by Wojciechowski and Palmer (2005) is that these skills can be acquired during the process of undertaking online courses, as this study showed a positive correlation between the enhancement of ICT skills and experience of using an online environment.

Furthermore, learners who have external responsibilities are regarded as significant influences over an OCL environment's effective implementation. Challenges that individuals face, such as workloads, scheduling issues, personal/family life or job commitments can all impede upon learners in terms of finding time and opportunities to complete their work and engage in collaborative activities. In this study, when the participants were asked to respond

to the statement that external responsibilities can impact on them finding time to work with their group, the results indicated that they were in agreement with this. The participants expressed concern that the required workload given by tutors was inconsistent with how much time they provided for work completion.

This study was therefore consistent with earlier research, such as Capdeferro and Romero (2012), who found workload and lack of time were challenges for learners when using an online setting, as well as other studies that have shown that different schedules may affect opportunities for individuals to collaborate with their peer groups (Capdeferro & Romero, 2012; Wang & Woo, 2007). In addition, heavy workloads are also regarded as challenges, subsequently leading students to have less time and motivation to adopt these new learning approaches (Koo, 2008; Gabriel, 2004; Chiong & Jovanovic, 2012).

Moreover, Chiong and Jovanovic (2012) further concur with the findings in this study, where time constraints as a result of personal and employment commitments were causes that impacted upon the implementation of the OCL setting. Thus, one may conclude that if the OCL environment is to be implemented successfully, other responsibilities that impede upon collaborating with peer groups need to be seriously considered. As Garrison (2006) proposes, collaboration needs time so that participants can actively engage with one another, and also to enable them to read others' views and respond appropriately rather than superficially (Gabriel, 2004; Park & Bonk, 2007). Thus, whatever imposes upon this time should strongly be taken into account.

While external responsibilities can impede upon the effective implementation of the OCL environment, another clear aspect that can influence how this setting is used, is the students' resistance towards it. It is often viewed as a new approach to learning that may cause learners to avoid peer interaction due to fear of "freeloaders", a lack of self-confidence or enjoyment in working with others, or longer timescales to complete a task due to the need

to collaborate. As highlighted, students who come from a conventional learning environment, such as the Saudi context, are often uncomfortable with change. Moreover, in reference to the collaborative approach, many learners are reluctant to engage in group work due to negative past experiences (Harasim et al., 1998). Nevertheless, an interesting observation of this study was made when participants responded to the statement that it would be difficult to accept the change to work collaboratively within an online environment. Contrary to what has been found in previous research, the learners disagreed with this statement, subsequently implying this change would not be an issue, nor would they exhibit any resistance towards it. This conflicts with the recent findings by Al-Ismaiel (2013), who asserts that learners within the Saudi context would have a clear preference for traditional approaches to learning due to cultural factors, and would not be inclined towards a collaborative learning approach.

As part of this study, the specific shortcomings of the individuals themselves, such as their interpersonal and communication skills, as well as their confidence and language ability were also explored as key factors that could influence the effective use of the OCL environment. From the responses given by the participants, they agreed that these limitations hindered them in this setting, which is consistent with previous research. For instance, the study by Roberts and McInnerney (2007) identified a lack of essential group-work skills to be a common issue among students when collaborating online, while Williams (2003) found interpersonal and communication skills to be dominating factors pertaining to the effective use of this environment. These skills also included the ability to engage in open discussion with team members and accept what others say. Moreover, the study by Mishra and Juwah (2006) also confirmed what was found in this study, wherein students that were identified with confidence issues, particularly in their academic language ability or speed at which they type, were subsequently intimidated by the academic writing ability of their peers and, thus, it significantly affected how they would conduct themselves online. Furthermore, in response to

the statement that a lack of knowledge could hinder the learners' participation in the OCL environment when discussing a particular course topic, the results showed that the participants agreed with this (Figure 5.2). This is in line with Lorraine's (2011) study, which found the level of knowledge held by the participants posed a challenge to the implementation of an online setting.

As highlighted earlier, the fear of being criticised by the peer groups was identified as an influential factor. As shown in Figure 5.2, the response given to the statement that the participants were reluctant to use the OCL environment (i.e. posting on forums/discussion boards) for fear of criticism from their peers and thus hindering their participation revealed that participants agreed. Additionally, with regards to the responses in this study towards the statement that the participants needed more training and guidance to adopt the OCL setting more effectively, the findings showed that the participants were in agreement with this, as shown in Figure 5.2. This is in line with previous research, which posits that the need for training and guidance from the tutor is necessary for learners to build a solid foundation in how to use the OCL setting effectively. In this respect, learners should be taught and given clear guidance on how to improve their collaborative skills, and guidance on how to ensure group members agree to collaborate and participate with one another (Palloff & Pratt, 2005). This is also supported by Sanders (2008), who found that those who had little educational experience or training in collaboration or peer-reviewing often saw their peers as competing with them, which ultimately affected the collaborative process. Moreover, Kearsley (2000) asserts that the majority of individuals do not possess any formal training in how they should collaborate and work within a team, further emphasising how the social environment and interactions in an online environment are widely different from face-to-face interactions, thus necessitating a distinct set of relevant skills.

As a summary for the second question, which focuses on the influences of student characteristics over the OCL setting, a number of key areas were discussed. Within this factor, learner awareness about the importance of the OCL environment was explored, where the findings showed that the participants did not exhibit such awareness; nor did they acknowledge or give value to this type of setting. This was interlinked with another area of discussion, which was the participants' willingness to use the OCL environment. Due to the lack of awareness of the value of using this type of setting, as well as having negative experiences towards it, the findings showed that the participants' implementation of this environment is hindered. Furthermore, when analysing how the participants' previous experience with using an online environment helped them to use the OCL environment, the results showed that the participants were in agreement with this; the reason for this may be because previous experience gave them a basis to build upon. Another aspect that was addressed was how well the participants' ICT skills helped them in using the OCL environment, to which the findings showed the participants were in agreement. A compelling aspect that was also explored was the participants' external commitments, such as workloads, meeting schedules, personal or work commitments, and how these impacted upon their use of the OCL environment. The participants agreed that this was indeed a hindrance towards the effective implementation of this type of setting and elements of this would need to be addressed. In addition, when responding to the statement concerning a resistance to change, and whether or not participants would find it difficult to accept this change to use an OCL environment, the results opposed previous research, indicating that the change to this environment would not be an issue for the learners nor would they show any resistance towards it. Moreover, when exploring the participants' own shortcomings, such as their confidence and interpersonal skills, the participants agreed that these aspects could be a hindrance in the effective adoption of the OCL setting. This was also the case for the

participants' lack of knowledge of course topics and how this too could hinder their participation when collaborating. Such issues could be interlinked with another aspect of the student characteristics, which was their fear of being criticised by their peers. From the results of this study, the participants felt that this criticism would hinder their participation and make them reluctant to use the OCL environment effectively. Lastly, in terms of the need for learners to have training and guidance in adopting the OCL environment, the participants agreed that this was necessary and that the tutor played a key role in ensuring this took place.

5.5 The third question: Tutors' roles

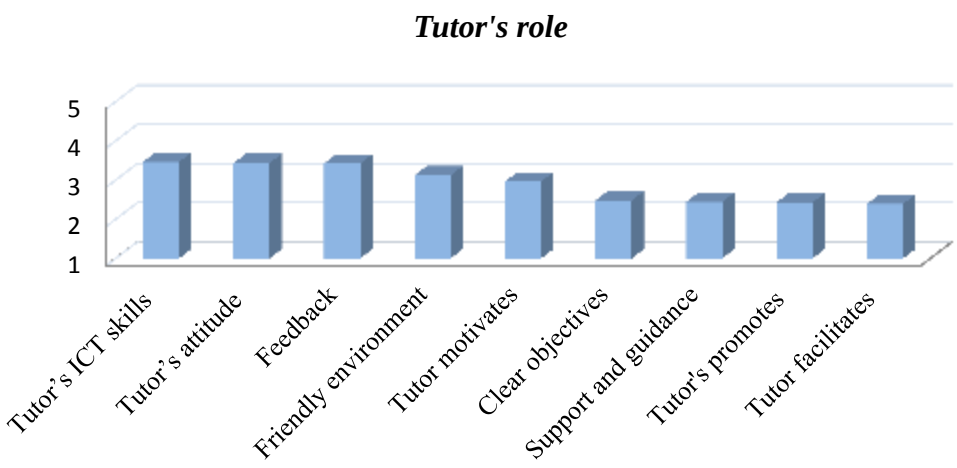
The role of the tutor has been widely regarded as playing a vital role in the successful implementation of the OCL environment, where their contribution and ability to motivate students in using online tools could enhance their students' learning experience (McPherson & Nunes, 2004; Clark & Mayer, 2011). Moreover, the tutor can be responsible for influencing how their students view the OCL environment, which is achieved by their ability to generate and sustain collaborative learning activities and tasks.

Within the tutor's remit in adopting an OCL environment, their role is often divided into different areas, such as managerial, social, technical or pedagogical (Berge, 1995). For instance, the pedagogical role focuses around educational facilitation, which may comprise of various aspects such as giving feedback, examples and models, instructions, as well as motivating students to explore the sources of information and put forward their views and ideas (Maina et al., 2015). Thus, their approach and style in how they teach is instrumental in the implementation of an OCL setting, specifically with regards to influencing student participation (Salas et al., 2002). Existing literature has clearly shown that the tutor assumes a

facilitator role when teaching in an online environment (Bernard & Rubalcava, 2000; English & Yazdani, 1999).

Referring to the third research question, which asks, *what are the tutor's roles that may influence the use of collaborative approach within an online environment effectively from the students' perspective?*, a group of items that were found in relation to factors in the tutor's role. These have been extracted from the data in Table 4.24 and presented in a column chart format in Figure 5.3. What follows is a detailed discussion of these items in light of the results from the previous chapter.

Figure 5.3 Tutors role



In order to generate an impact on their students, in terms of using the OCL environment effectively, the attitude of the tutor is vital. Thus, when a tutor exhibits a positive attitude towards the application of the OCL environment it can subsequently have a positive influence over their learners. This might be exhibited through: their enthusiasm, acknowledgement, giving value to this type of setting, advocating an interactive approach to teaching, as well as their knowledge and confidence in using technology. This attitude towards the use of ICT

stems from their understanding of how it can benefit the learning experience and construction of knowledge for the students (Evans & Kozhevnikova, 2011).

In this research, the participants' responses to the statement, does the tutor's attitude towards collaborative learning within an online setting influence whether you use it? indicated that they agreed with this statement. This is in line with research by Mueller et al. (2008), and Webster and Hackley (1997), where the attitude of the tutors towards an OCL environment and ICT in general, was regarded as a crucial factor for its implementation, and as a means of improving learning outcomes. Thus, one could imply that learners who have a tutor that has a positive attitude towards collaborative learning and subsequently promotes this pedagogical approach are more likely to also have a positive experience. However, it should be noted that this is not always the case, as there have been instances recorded where the tutor does possess a positive attitude towards the OCL environment, but their students do not adopt a similar outlook (Judson, 2006).

In addition to having a positive attitude towards the OCL environment, it is imperative that the tutor fulfils their pedagogical role when using this type of setting, by providing clear and appropriate objectives towards tasks and group activities. Students will often feel more at ease and less stressed if they are given clear expectations and guidance by their tutor, which is among one of the key responsibilities assigned to the online tutor. Tutors should therefore ensure they focus on planning and goal setting for their students, in order to improve the learning experience, knowledge and skill level.

In light of this area of discussion, when the participants were asked to respond to the statement that their tutor assigned clear and appropriate objectives to them when using the OCL environment, the results showed that the participants disagreed with this. One can deduce that this can become a hindrance in the effective use of the OCL environment, as experienced by the learners. This is in line with Zygouris-Coe (2012), who emphasises the

importance that tutors must give in preparing their learners for collaboration. He elaborates upon this, stating collaboration itself implies a shift in responsibility and control from the tutor to the learners in order to generate more meaningful and relevant tasks. Thus, it is imperative that the tutor provides clear and appropriate objectives, as well as explaining the purpose and processes of collaboration to the learners.

While the objectives and goals set by the tutor are necessary, it is also important for the tutor to take on the role of a guide, thereby providing support and guidance to their students, particularly within a group setting and during collaborative projects (Palloff & Pratt, 1999). Thus, when the participants in this study were asked to respond to the statement that their tutor provided adequate and appropriate support and guidance when using the OCL environment, the results revealed that the participants disagreed. Results showed that they felt they did not receive the necessary support that was required, and in turn, this may have a negative influence on their experience of the OCL environment.

Within a collaborative learning environment, everyone within the group is responsible for their learning, which leaves the tutor to adopt a facilitator role. This enables them to aid the students in constructing knowledge by referring back to previous knowledge and experience. Moreover, they begin to monitor the progress of their students during group activities and intervene where necessary. In light of this, the online tutor should therefore motivate students to take on a role as independent learners, and progressively encourage them to become more responsible for their learning (Salmon & Giles, 1999; Cox et al., 2000). Once the individuals (and groups) have taken ownership of their learning, the tutor can facilitate this through the maintenance of a discussion or in summarising the students' key findings.

Thus, when the participants were asked to respond to the statement that their tutor monitors and facilitates their collaborative tasks using the OCL tools, without any direct

interference, the results showed that the participants disagreed with this. This indicates that the tutors were involved in the tasks that they set and could be a cause of hindering the effective use of the OCL environment by the learners. To contextualize this area of discussion, one may argue that the reason for the tutors being more involved in the tasks could be due to the traditional and direct teaching approach that is often adopted within the Saudi education system. That is, the tutors may be accustomed to teaching in this particular manner, and find it difficult to change. If students are to adopt the OCL environment, it is vital that they also work together as a group, which should be promoted and encouraged by the tutor. Teamwork is successful if all members within a group are working together amicably on the task objectives, as this will create an environment that is conducive to learning. Moreover, by creating respect within the group, it becomes a place that is comfortable for team members to discuss openly without fear of criticism or ridicule. In this study, when the participants responded to the statement that their tutor actively promotes teamwork within the OCL environment, the results showed that the participants disagreed.

In addition, even though the OCL environment is designed for generating collaborative activities, the tutor should therefore encourage their students to share their views and opinions by presenting these to the other group members. Encouragement and motivation has been observed as having a positive effect on how often students contribute when using this type of setting. In light of this, when the participants responded to the statement in this study that their tutor motivated and encouraged them to contribute during collaborative tasks when using the OCL environment, the results gave no definitive answer as to whether they agreed or disagreed. As previously stated, one major cause for students' reluctance in adopting the OCL setting is fear of criticism or ridicule. This subsequently leads to them becoming anxious in contributing online. The tutor should therefore play a pivotal role in ensuring the course is delivered successfully (Zheng et al., 2015; Fulton et al., 2015),

and seek to generate a friendly, safe and social online environment, so that students are happy to express their opinions and views; this in turn will enhance collaboration. Thus, when responding to the statement that the tutor actively cultivates a warm and friendly OCL environment to alleviate any anxiety, the results in this study again showed that the participants were not definitive in their response; they neither agreed nor disagreed with this.

While tutors should not only create a friendly and social online environment, it is also necessary that they exhibit an appropriate level of ICT skills and competency in using the LMS features and tools. Possessing such skills has been shown to maximize interaction from the learners and can develop and improve their ability to learn (Clark & Mayer, 2011). In this study, the results showed that the participants agreed with the statement that the tutor's ICT skills and competency in using LMS tools is vital to alleviate frustration during learning. This is consistent with previous research that asserts one of the main negative influences towards the effective use of online environments by the learners is if the tutor posseses a lack of knowledge and skill in this area (Mamun & Tapan, 2009; Pelgrum, 2001; Ihmeideh, 2009). One may also argue that the statement made by Pelgrum (2001) on how educational initiatives are dependent upon the knowledge and skills of the tutor could also apply to the OCL environment as being an educational initiative. Thus, tutors who have knowledge and appropriate skills in using this type of setting could also influence how effectively the learners use it.

Another aspect that is valuable for the learners is the feedback they receive from the tutor, as it gives them a better understanding of what is expected from them, what they need to do to achieve a higher standard of work, and what changes they need to make in order to improve their learning (Hattie & Timperley, 2007; Shute, 2008; Coll et al., 2014; Van der Kleij et al., 2012). In this study, when the participants responded to the statement that, whenever the tutors provided them with prompt feedback in the OCL environment, it

influenced their participation, the results showed that the participants agreed with this, thereby highlighting how this could improve their use of this environment. This is in line with previous research, as tutors who give clear guidelines during feedback will enable their learners to rethink their learning and will generate an impact on their achievement. This is because the students know what is required and will take the necessary risks to reach such objectives (Brookhart, 2008; Hattie & Timperley, 2007; Shute, 2008). It is therefore incumbent within online learning that the lines of communication between the tutor and their students are constantly maintained (Wegner et al., 1999). This is also consistent with the study by Menchaca and Bekele (2008), whose findings showed that participants felt the teaching staff played a key role in helping them achieve their learning goals, which were achieved through feedback and by monitoring online activities.

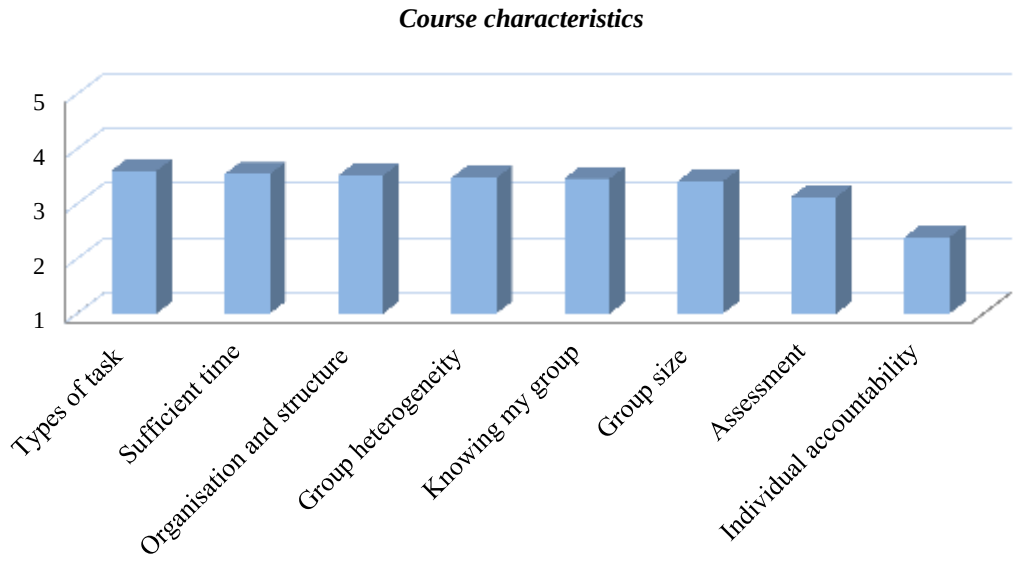
In summarising the tutors' roles that influence the effective use of the OCL environment, the participants provided detailed insight into what aspects would hinder or support how they experienced this setting. In discussing the tutor's attitude in terms of acknowledging and valuing the importance of the OCL environment as a positive influence on their students' learning and experience, the learners agreed that tutors should exhibit such attitudes, even though this was not necessarily present in all cases within the current context. This highlights just how vital this aspect is in influencing how the students adopt this approach. Additionally, in response to whether their tutors provided clear and appropriate objectives when using the OCL environment, the participants stated, to a certain extent, that their tutors did not provide such guidelines, and subsequently, this could become a hindrance to their experience of this type of setting. Furthermore, in terms of the level of support and appropriate guidance provided by the tutors in this context, the participants felt this was relatively inadequate, whereby the necessary support was not given, resulting in a negative experience over the OCL environment. Another aspect of the tutor roles that was addressed

was whether they monitor and facilitate the collaborative tasks of their learners without interfering directly. In regards to this, the participants felt this was not the case, to a degree, and that the tutor's direct involvement also had the potential to hinder the effective implementation of the OCL environment. The tutor's responsibility to promote teamwork during the collaborative tasks was also criticised by the participants, who felt their tutors did not actively encourage this. They also expressed a certain level of criticism over their lack of motivation and encouragement in contributing towards tasks within the OCL setting. Both these aspects were regarded as clear areas that could hinder the effective use of the OCL environment. In terms of expressing their experiences over how vital the competency levels and ICT skills of tutors were when using the LMS, the participants agreed that this was highly important. Lastly, when addressing the influence that their tutor's feedback had on their level of participation in the OCL environment, the participants were in agreement that this would improve how they adopted this type of setting.

5.6 The fourth question: Course characteristics

The course characteristics play a vital role in influencing collaborative learning within an online environment (Benson et al., 2012; Witney & Smallbone, 2011; Cole, 2009). With this being the case, tasks should therefore provide the learners with an opportunity to put forth their ideas, encourage engagement with one another and enable them to refer back to previous knowledge (Kershner et al., 2010; Warwick et al., 2010). In relation to the fourth question for this study, the focus was on the course characteristics. It asked the following question: *From the students' experience, to what extent do the course characteristics influence the effective use of the collaborative approach within an online environment?*

Figure 5.4 Course characteristics



The group of items in relation to the course characteristics factor have been presented in Figure 5.4, which have been extracted from the data in Table 4.25 and presented in column chart format.

In terms of the organising and structuring of a task, Lim and Liu (2006) have highlighted that the nature and structure of a task is highly relevant for collaboration amongst learners, particularly when these tasks are structured and implemented correctly. They further show that structured tasks can prevent information overload for the students, and when designed appropriately (i.e. adequate scripting), they encourage interaction. With regards to the responses given in this study to the statement that the organisation and structure of a task can encourage the learners to participate collaboratively, the findings indicated that the participants agreed with this (Figure 5.4). The reasons for this were elaborated upon during the open-ended questions and focus group interviews, where the participants felt structure was important because the tasks they have currently been undertaking have, to a certain extent, been unstructured and not designed to implement a collaborative approach. Thus, it

has hindered their collaborative efforts within their groups and in the effective use of this setting.

Brophy (1999) also affirms that the structure of a course and the task materials not only give coherence and clarity to the course itself, but that they are major factors that can facilitate deep learning. Moreover, while it is vital to ensure the tasks are at the appropriate skill level of the learners, one should also ensure they are relevant for the learner, as this will be a means of motivating the learners to collaborate with one another (Brindley et al., 2009). Furthermore, the instructor is expected to carry out a number of tasks, such as explaining the course contents and structure of delivery, providing clear feedback of accomplishments, motivating students to reflect and analyse the task content, as well as supporting them during their learning journey (Brophy, 1999). Therefore, the issues of quality when designing courses and the course content should be taken into account. An ideal OCL setting structure would therefore comprise suitable learning tasks and formulating processes that would assist the students in active collaboration (Barkley et al., 2014). This means a number of considerations should be made during the design stage of these tasks, which, as stated, should focus primarily on ensuring they are appropriate for the students' level and ability, as well as meeting the objectives of the course (Barkley et al., 2014).

In addition to the organisation and structure of the task, the type of task itself can also be an effective means and influence over the level of collaborative participation. In light of this, a diversity of information is required to ensure this occurs, particularly when the task is comprised of various stages and can be resolved through contributions from all group members (Moreland et al., 2013). In this study, the responses given to the statement that the type of task encourages and influences the learners' levels of participation and collaboration, the findings indicated that the participants agreed (see Figure 5.4). This is in line with the study by Strauss (1999), who proposes that the task type (intellectual, judgement and idea

generation tasks) may have a considerable effect on how interaction occurs, particularly on how many statements of processes, agreement and disagreement are made. This subsequently corresponds to interdependence amongst group members within a task.

Regardless of the type of task, another aspect that is important to discuss is how accountable each individual is within a group. Johnson and Johnson (1994) affirm that collaborative learning occurs successfully when the task enables the students to maintain their task interdependency and with individual accountability. Johnson et al. (2013) also insist that such a design is a significant means of promoting interdependence and generating individual accountability, which means all the group members take responsibility for the task by working together, whilst also exhibiting a level of reliance upon one another in order to achieve task success. Thus, this distribution of work within a task has the ability to encourage and increase each member's level of participation and collaborative efforts.

With regards to the responses given in this study to the statement that there is a current balance of distribution for tasks between each of the group members, which may create individual accountability that will help the learners participate more and will value each member of the group, the participants stated that they disagreed; there is, thy stated, an imbalance of distribution currently occurring. One may propose that different ability levels within a group can cause such an imbalance, as it means stronger group members will complete the majority of the group task to ensure it is done correctly. This is in line with Gundlach (2011) and Curtis and Lawson (2001), who explain that this may subsequently affect the contribution from other group members and also how much they interact or collaborate. Furthermore, in order to achieve the desired outcome when adopting the OCL environment, it necessitates individual accountability, responsibility and positive interdependence. Learning should therefore be social and collaborative if it is to be regarded

as effective, as opposed to being isolated and competitive, which means the sharing of ideas can enhance and deepen understanding (Zion et al., 2015).

In addition, from among the aspects that influence the effective use of a collaborative approach within an online environment, smaller group sizes have been identified and acknowledged as being more ideal to foster equal contribution and effective group discussion among all group members (Finegold & Cooke, 2006). The participants in this study agreed with the statement as to whether they felt the smaller group sizes were more suitable for effective participation (Figure 5.4). The study by Springer et al. (1999) supports this finding, where smaller group sizes were seen to generate greater and better achievements in academia, as well as a positive learning experience. In addition, similar to this study, Brindley et al. (2009) found students preferred smaller groups to larger study groups. Research has also shown that when group sizes are increased, the performance of each group member can be affected, particularly in terms of managing the group and when dealing with everyone's ideas or opinions (Moreland et al., 2013; Saavedra et al., 1993).

The participants in this study were also in agreement with the statement concerning the aspect of familiarity with other group members, which stated that if participants knew their fellow group members, it would encourage them to participate in the OCL environment. While there are certain studies that assert no direct correlation between familiarity of group members and its effect on collaborative learning (Maldonado et al., 2009; Dutson et al., 1997; Newcomb & Bagwell, 1995; Mukahi & Corbitt, 2004), a number of studies do confirm that familiarity and knowing the other members of a group can increase the level of collaboration. Furthermore, familiarity may also motivate them (Spiro et al., 1988), as well as lead them to have a positive outlook and experience of teamwork and communication (Janssen et al., 2009; Stark & Bierly, 2009).

Having group members work together can therefore be vital in fostering a positive group environment, which, in turn, can assist in generating more beneficial interaction amongst members (Kwon et al., 2013). This may also lead to a more positive interdependency within a group, thus ensuring the members of the group will readily support one another and be more confident in collaboration. Furthermore, Tseng and Yeh (2013) assert that trust within a group is developed when the members are accountable for an individual share of their work.

In contrast to what has been discussed, the unfamiliarity of group members or not knowing who they are can cause a drawback to collaborative learning. For instance, if a learner is randomly chosen to join a particular group that is not of their choosing, it has the potential to significantly influence their level of engagement, as they may feel irrelevant (Lai, 2011; Gundlach, 2011). Adams et al. (2005) affirm that familiarity can increase satisfaction of the group process. In line with familiarity of the group members, the participants also agreed with the statement that the homogeny within a group helps develop and encourage effective participation in the OCL environment. This supports the findings by Juwah (2006), wherein allowing students the freedom to choose their own groups and topics can foster an increased level of interaction amongst members and generate a positive group environment.

A further aspect that has been explored as influencing the effective use of the OCL environment is having ample time to carry out a collaborative learning task. This is highly important for learners to provide work that is of good quality and is completed to a good standard. In respect to this, discussion and collaboration within a task needs sufficient time so that learners can actively engage with one another. In this study, when the participants were asked whether they felt there was sufficient time to complete relevant group tasks, the response was in agreement. This is supported by Garrison (2006) who explains that the learning experience and quality of work is affected by an excessive workload, as well as not

having enough time to complete it. Moreover, those responsible should also consider how to structure such tasks by ensuring the tasks are challenging yet achievable, and that they can be completed within the timescale of the course (Bouchat, 2007).

In addition to having ample time, it is often noted in literature that learners will participate in tasks that they regard as beneficial to them. For instance, Lockwood (1995) highlighted that certain learners would be incentivised to take an active role in collaborating on tasks if they were linked to assessment. Thus, research supports the findings that tasks linked to students' grades or made a compulsory component of the course will ensure higher levels of participation and collaboration (Bernard & Lundgren-Cayrol, 2001; Clark, 2001).

Interestingly, when the participants responded to the statement that the assessment within the OCL environment affects how they use it, they responded neutrally, neither agreeing nor disagreeing. This shows that some of the respondents would agree with what has already been mentioned; however, one may also note that assessment can cause a level of reluctance and dissatisfaction amongst group members, as they feel mandatory participation means they do not have full control over their tasks and that their grades are assigned to them accordingly.

In addition, during the open-ended questions and focus group interviews, the participants also began to question how assessment in this environment was going to be graded effectively. For instance, issues such as how to impartially grade student participation within a group, and assess their level of engagement and completion of their task were discussed.

Moreover, Strijbos (2011) asserts that assessment within OCL is often overlooked within the design of tasks and collaborative learning in general. According to Swan, Shen and Hiltz (2006), to ensure learning participation occurs, one must show the value of learning within a group through assessment and as Swan et al. (2006, p.45) state, "Assessment can be

seen as the engine that drives student course activity, online or off. It is particularly important in encouraging and shaping collaborative activity online". Barkley et al. (2014) elaborate, stating that the task should be devised in such a way that the tutor is able to effectively assess and evaluate both group and individual performances throughout the task itself.

In summarising the course characteristics that influence the effective use of the OCL environment from the students' experiences, a number of key areas have been explored. Thus, when the participants were asked to give their experience on how the organisation and structure of a task can motivate them to collaborate effectively, they agreed that structure was important. Similar findings were also made in terms of the students' experiences over the type of task that was given and how this would influence their level of participation and collaboration, whereby those tasks that involved interaction could have a positive consequence over the effective use of the OCL environment. Another aspect of the course characteristics that was addressed by the participants was over the current balance of distribution for collaborative tasks amongst the group members, which in turn created individual accountability, encouraged the learners to increase their levels of participation and showed that they value their group members. However, in the current context, the participants disagreed with this and felt this was not the case. This was also linked to another aspect of the course characteristics, which was in relation to the size of the group. For this, the participants felt that smaller group sizes would be more effective for participation and more suited for the OCL environment. The participants also agreed that having familiarity with group members would also motivate and support them to participate in this type of setting. This was also the case for the respondents who felt having homogeny within the groups would help them develop their level of participation. Moreover, when exploring whether the participants felt a task within the OCL environment should be given sufficient time to complete, they stated that this was necessary. Lastly, in relation to the assessment of

the learners' contribution within this type of setting, the participants responded neutrally, neither agreeing nor disagreeing. Their reason for this was because the assessment process was quite unclear; they questioned how participation and engagement during a task could be graded fairly.

6 Chapter Six: Conclusion

The previous chapter offers discussion of the data that were found within this study in light of the existing literature. Hence, the discussion chapter encapsulates the objective of the research, which is to explore and understand the underlying factors that influence the effectiveness of existing OCL environments in the Saudi higher education context. This is ultimately achieved by answering the main research question: *What are the factors influencing the effective use of the online collaborative learning environment, as experienced by male undergraduate distance learners in King Abdulaziz University?*

Furthermore, in order to answer the main research question, the following four sub-questions were also outlined and summarised:

1) To what extent does the existing infrastructure and LMS provide a reliable platform in facilitating the collaborative approach within an online environment from the students' experience?

2) What are the students' characteristics that may influence the collaborative approach to occur within the existing online environment?

3) What are the tutors' roles that may influence the effective use of the collaborative approach within an online environment from the students' experience?

4) From the students' experience, to what extent do the course characteristics influence the effective use of the collaborative approach within an online environment?

This chapter presents a summary of this research, by extracting key aspects of the results and discussion, in order to draw a clear conclusion. The chapter also highlights the contribution and the limitations of this research and ends by providing suggestions for further study.

6.1 Research summary and conclusion

As the advent and development of technology has had a significant role in shaping human cognition and learning, education needs to utilise such technologies in order to help individuals engage in an information society. This use of technology and its effect on our ability to learn is evident with the use of online learning, which, through support from new technologies, has greatly enabled learners to develop their cognitive and communication ability through collaboration and interaction, without having to consider the time or place to use such an environment. Moreover, there is a greater need within the educational domain to shift the learning approach from a teacher-centred one to more of a student-centred one, which is one aspect that collaborative learning is effective in achieving.

In light of both the advantages and the need for online collaborative learning, the aim of this research is to identify factors influencing the effective use of such environments, as experienced by Saudi male undergraduate distant students. This is achieved by analysing the responses that the participants gave from questionnaires, and then focus group interviews, regarding their experiences of using the collaborative approach within the online environment.

This thesis began by establishing that the effective use of the OCL environment is a means of facilitating and increasing the learning process within the educational domain. The ultimate purpose behind this is to ensure students within the Saudi context are equipped with the necessary skills, as well as the ability to construct knowledge and meaning, which they can then transfer and utilise when moving into employment.

Prior to the literature review, it was important to first define and elaborate upon the reoccurring main terms used throughout this study, such as Online Learning, Collaborative Learning and Online Collaborative Learning. The literature review provided a description of and insight into the OCL environment, particularly focusing on the various factors that could

influence its overall effectiveness and implementation. Drawing together this research, the study identified a number of these key factors from both theoretical and practical studies, which were classified into four main areas: technology related factors, student characteristics, tutors' roles and course characteristics.

Once this classification had been established, it was necessary to explore and determine what theoretical framework would be adopted to ensure this study was conducted appropriately. It is vital for researchers to explore their methodological approach, whether quantitative, qualitative or mixed methods, so that they can assume a particular stance when referring to the research and research design. Upon deliberation and exploration of the underlying principles of the various research methodologies, the justification and implementation of a mixed methods approach in this study was subsequently made, where both quantitative and qualitative data were used to determine the factors influencing the effective use of the collaborative approach within an online learning environment, as experienced by male undergraduate distance learners in KAU. In addition, an overview of the data collection instruments was also provided, addressing issues of their reliability and validity for the purpose of this study, as well as discussing how the data was to be collated and analysed.

When implementing the data collection for this thesis, the quantitative data were gathered first in the form of an online questionnaire. This was sent out to 975 learners via email where a sample of 729 student participants responded, generating a 75% response rate. Once there were collated and visualised, the qualitative data was obtained through a series of two focus group interviews to elaborate and triangulate the findings of the questionnaire. This data was also subjected to an analysis process, which was done using a thematic analysis approach to determine any emerging themes relating to the factors influencing the effective use of the online collaborative learning environment. Once the data were analysed, the

findings that emerged from the questionnaire and focus group interviews were presented together in the results chapter and efforts were made to answer the four research sub-questions independently and in a consecutive manner, in light of the literature review.

Within this thesis, I tried to generate a wide picture with regards to the factors influencing the effective use of the online collaborative learning environment, as experienced by male undergraduate distance learners in KAU. Thus, an explanation of how the participants perceived collaboration when using such an environment was made, particularly in terms of what would facilitate and hinder collaboration, as well as identifying what could be done to improve this. The following sections are divided to relate to the sub-questions of this research:

1) To what extent does the existing infrastructure and LMS provide a reliable platform in facilitating the collaborative approach within an online environment from the students' experience?

The technology related factors have been explored to ensure the OCL environment is reliable and offers an appropriate and adequate infrastructure. In light of this, the advancement and accessibility of the LMS, Internet speed and overall infrastructure were all identified as primary factors that could influence the online learning environment. Thus, in terms of accessibility to the LMS, the area of computer availability was explored, which the participants stated did not cause hindrance. As for Internet speed, this study yielded different viewpoints, where the quantitative data found the Internet speed was adequate, but the qualitative data analysis found participants had certain difficulties in accessing the LMS as a result of poor Internet services. With regards to using the LMS on different devices, a number of compatibility issues were highlighted on certain devices, which in turned hindered the effective use of the OCL environment and collaborative learning in general. Conversely, the participants from the study felt the actual OCL tools provided by the LMS were adequate and

added flexibility for the purpose of collaboration within the LMS, which in turn promoted the effectiveness of the OCL setting. Lastly, with regards to the availability of immediate and adequate technical support, the findings showed that this was regarded as a clear problem when using the OCL environment.

2) What are the students' characteristics that may influence the collaborative approach to occur within the existing online environment?

A number of key identified student characteristics were analysed and discussed in relation to the effectiveness of implementing the OCL environment. When students actively engage with one another, the act of sharing and exchanging their views and ideas can often lead to an increase in learning. However, with regards to the awareness that the learners had towards the importance of the OCL environment, the findings showed that they were to a certain extent unaware and acknowledgement or values given by the learners. Moreover, in terms of their willingness to use the OCL environment, the study showed a certain unwillingness, which was attributed to the previous factor (i.e. the students' lack of awareness and value given to the OCL environment).

In analysing how the participants' previous experience using an online environment had helped them to use the current OCL environment, the findings showed previous experience was useful, as it provided a foundation for the students to build upon. Moreover, the participants' ICT skills were also identified as a useful skill to help them use the OCL environment. One important area that was identified within the student characteristics was their external responsibilities (i.e. workload, meeting schedules, personal or work commitments). This has an influence on how the OCL environment was used as it hindered the effective implementation of this setting.

Furthermore, in terms of student resistance to change or acceptance of adapting to the OCL environment, the findings of this study opposed previous literature, highlighting little or no resistance by the students would be made during the implementation of this setting. This, however, did uncover issues in the students' own shortcomings towards the OCL environment, such as their confidence or interpersonal skills, which were cited as a hindrance in the effective adoption of this environment. This was also found in relation to the participants' lack of knowledge on course topics, which could also result in a lack of collaboration. Further aspects pertaining to the student characteristics were also identified and interlinked with the previous factor; issues relating to the students' fear of criticism from their peers would also inhibit the effective use of the OCL environment. Lastly, the findings showed that it was necessary to provide training and guidance for students in how to use the OCL environment correctly, and that the tutor was the key individual to ensure this occurs. This means students should be taught how to collaborate with one another in a meaningful manner, which can be achieved by teaching them collaboration skills, having clear guidelines of what is required during collaboration, as well as through modelling the whole process to experience it for themselves. Collaboration guidelines are important, as students should have knowledge of what collaboration and meaningful dialogue actually means, as well as how one should give constructive feedback.

3) What are the tutors' roles that may influence the effective use of the collaborative approach within an online environment from the students' experience?

As identified within the existing literature, the tutor's role is widely regarded as being important for the successful implementation of the OCL environment. Their ability to motivate their learners in using online tools is necessary so that learners share a desire to adopt this type of setting. Interestingly, within this study, much of the findings showed that

the participants felt the current role of the tutor somewhat hindered the effective use and implementation of the OCL environment to support student learning and influence the learners' experience. This was due to a number of reasons, such as the tutor's overall attitude to acknowledge and value the importance of the OCL environment, as well as an incorrect application of how the OCL environment is to be made (i.e. applying a traditional teaching approach to this context, instead of taking advantage of its full potential for collaboration). Moreover, when the participants were asked to comment on whether their tutors provided clear and appropriate objectives when using the OCL environment, they stated that, to a certain extent, this did not occur, which further hindered their experience and implementation in using this type of setting. Moreover, with regards to the amount of guidance and level of support their tutor provided, the participants felt this was relatively inadequate, which further caused negativity amongst the participants when using the OCL environment. In resolving this, it means tutors should have and provide clear guidelines for collaboration and implement them accordingly. Furthermore, in terms of how effectively tutors monitor and facilitate the collaborative tasks of their learners (without any direct interference), the participants felt the tutor did not facilitate correctly and would often interfere directly during collaborative tasks. This could further hinder the effective implementation of the OCL environment.

Another area that was criticised by the participants in relation to the tutor was their ability to promote teamwork during collaborative tasks; the participants stated that the tutor did not actively encourage participation and, instead, expressed minimal amounts of motivation. Moreover, results showed that if the tutors would provide adequate feedback on the level of participation made by the learners within the OCL environment, this would improve and influence effective use. Lastly, as learning is often dependent upon the knowledge and skills of the tutor, the participants within this study further expressed their

thoughts that it was crucial for tutors to have a certain level of competency and ICT when using the LMS. A clear aspect pertaining to this was for tutors to have the necessary understanding and training on what collaboration is and how it should be implemented. This includes providing clear guidelines and constructive feedback to the learners, as well as using a number of techniques to help learners collaborate, such as modelling. In doing so, it would ensure learners are clear about what to expect during collaborative tasks. Thus, while technology is always subject to improvement, it is equally necessary for tutors to also seek to improve and be creative in their pedagogical practices for their specific context.

4) From the students' experience, to what extent do the course characteristics influence the effective use of the collaborative approach within an online environment?

When ensuring the effectiveness of collaborative tasks within the OCL environment, it is necessary that the nature and design process of these tasks be considered. This means the characteristics of the course itself should be designed with the learner in mind and it should create an environment where the tutor can effectively adopt the role of a facilitator. Within this, a number of factors were identified. When analysing the student experience of the organisation and structure of a task, the findings showed that this was important to motivate effective collaboration. This was similar for a number of other items, such as the type of task that was given; in such instances, those tasks that involved interaction would have a more positive effect on how the OCL environment was used. In light of this, tasks with a practical element and design ensure learners will participate and collaborate with one another by sharing their experiences, presenting their views and negotiating their ideas.

In addition, when exploring the notion of individual accountability within a task, the participants felt there was no such accountability, which was due to the lack of balanced distribution and delegation of the task among the group members. One may postulate that this

linked to a lack of initial awareness and value given to the OCL environment or a lack of understanding about the implementation of the collaborative process.

Another aspect analysed was the group size during collaborative tasks, as the data for this study confirmed, with previous literature, that smaller group sizes were more effective for participation and suited to the OCL environment. In relation to group dynamics, participants also felt familiarity with other group members would be a positive influence in collaborating with one another, more so for those who felt having homogeny within the group.

Furthermore, within course characteristics, the aspect of sufficient time to complete a task was identified and analysed, whereby participants felt this was necessary to ensure the OCL environment was effectively used. Lastly, in terms of assessing the learners' contribution within the OCL environment, the participants felt this assessment process in such a setting was unclear, so they held an impartial view concerning it.

Tabla 6.1 Overviews showing levels of agreement or disagreement for each factor.

Factor	**Overviews for each factor**
Technology related factors	The findings revealed that the participants agreed with the statement that declared the availability of computers to access the LMS was appropriate and adequate. Furthermore, despite the participants' agreement with the statement that the Internet speed was adequate, some of the findings from the open-ended responses and focus groups interviews were in slight opposition to this view. In terms of the LMS being accessible on various devices, the participants rejected the notion that the LMS was adequate on such devices. The learners confirmed the existence, availability and diversity of OCL tools within the LMS for the purpose of collaboration, indicating that these tools provided a reliable environment. The participants' disagree with the availability of immediate and adequate technical support.
Students' characteristics	The findings showed that the participants did not exhibit such awareness of acknowledge or give value to collaborative approach within online environment. This was interlinked with another area of discussion, which was the participants' willingness to use the OCL environment. The results showed

	that the participants were in agreement with previous experience with using an online environment helped them to use the OCL environment. The participants were in agreement with that the ICT skills helped them in using the OCL environment. The participants were in agreement with that the external commitments, such as workloads, meeting schedules, personal or work commitments, was indeed a hindrance upon their use of the OCL environment. The participants agreed that their own shortcomings hindrance in the effective adoption of the OCL setting and this was also the case for the participants' lack of knowledge. The participants felt that their fear of being criticised by their peers would hinder their participation and the participants agreed that the training and guidance in adopting the OCL environment was necessary.
Tutor's role	The participants agreed that the tutor's attitude in terms of acknowledging and valuing the importance of the OCL environment as a positive influence on their students' learning and experience. The participants stated, to a certain extent, that their tutors did not provide such clear guidelines and appropriate objectives when adapt collaborative approach within online environment. The participants disagree with that the tutor they monitor and facilitate the collaborative tasks of their learners without interfering directly and the tutor's responsibility to promote teamwork, lack of motivation and encouragement during the collaborative tasks was also criticised by the participants. The participants agreed that the tutor's feedback necessary.
Course characteristics	The participants were asked to give their experience on how the organisation and structure of a task can motivate them to collaborate effectively; they agreed that structure was important. Similar findings were also made in terms of the students' experiences over the type of the tasks. Another aspect in the current context, the participants disagreed with the balance of distribution for collaborative tasks amongst the group members. This was also linked to another aspect of the course characteristics, which was in relation to the size of the group. The participants also agreed that having familiarity with group members would also motivate and support them to participate in this type of setting. This was also the case for the respondents who felt having homogeny within the groups would help them develop their level of participation. Moreover, when exploring whether the participants felt a task within the OCL environment should be given sufficient time to complete, they stated that this was necessary. Lastly, in relation to the assessment of the learners' contribution within this type of setting, the participants responded neutrally, neither agreeing nor disagreeing. Their reason for this was because the assessment process was quite unclear; they questioned how participation and engagement during a task could be graded fairly.

6.2 Research implication and contribution

While previous studies have been conducted to examine the collaborative approach within an online environment in Western contexts, there is a limited amount of research that examines this in the Saudi context, with no systematic literature review to be found. As such, this study contributes to the existing literature and extends our knowledge of the online collaborative learning approach for this particular context. Furthermore, this study is considered to be a foundation to future research in the field and may open the door for similar studies.

In light of this, the current findings of this thesis offer a number of important pedagogical and methodological implications and contributions. In terms of the pedagogical implications, first, the findings of this study pinpoint various students' experiences pertaining to the value of online collaborative learning. For example, student responses have shown that despite the university-adopted learning management system (Blackboard), which offers oriented collaborative based learning, instructors are still using traditional teaching methods that mainly offer a teacher-centred approach. Thus, this thesis suggests that policy makers and educational reformers should take these findings into consideration by designing various training programmes and improving instructors' as well as students' skills in order to acknowledge the importance of adopting the collaborative learning approach.

Second, the findings of this study show that instructors' practices greatly influence the way students benefit from the collaborative approach within an online environment through their implementation of traditional teaching methods. As such, these findings contribute to inform instructors' practices of their actual teaching performance from their students' perspectives.

Third, based on the analysis presented in this thesis, some students suggest that the nature of task instructions seem to be designed in way that does not stimulate negotiation and group discussion. Consequently, the findings of the present study suggest that stakeholders

including policy makers, material designers, instructors' training programmes and instructors should work together to come up with more effective online collaborative learning environments that are carefully designed and well-equipped with tools needed to efficiently utilize this approach for students.

Fourth, the analysis shows that the approach of online collaborative learning has no clear guidelines on assessment within this particular Saudi context, both of individual accountability and the group. Based on these findings, it is important for instructors to consider adopting fair assessment guidelines for online collaborative learning. Subsequently, such assessment leads to promote the credit of individual accountability and the group as a whole. Considering this assessment is regarded as an important step to appreciating the profit of this approach.

Having discussed the pedagogical implications of the current study, the section that follows will shed light on the methodological implications and contributions for the research in the field of online collaborative learning environments.

This thesis is among the few studies that have utilized mixed methods in the field of online collaborative learning environments and gained advantage from their strength. As such, to the best of my knowledge, there is very limited research that looks at online collaborative learning environments in the Saudi higher education context that adopted mixed methods.

In addition to the aforementioned contribution, this study has also highlighted the importance of adopting a mixed methods approach. As Creswell (2013) explains, mixed methods research is beneficial, as they provide rich and greatly elaborated descriptions. As such, the contribution in the methodology of this study confirms Creswell's argument pertaining to the effectiveness of these methods within the context of this study. Therefore, it is also a contribution to the body of research that explores the phenomenon of online collaborative learning within this particular context.

The present study also contributes towards theoretical frameworks, through which two crucial aspects are adopted. These aspects have been neglected in the context of online collaborative learning environment, namely: (1) learning theory (e.g. social constructivism and connectivisim) and (2) technology adoption model (e.g. technology acceptance model TAM). Thus, these two aspects provide important practical applications for future research that seeks to conduct an empirical study in the field of adopting collaborative learning within online environments.

6.3 Limitations

Despite there being a number of key strengths that have emerged within this research (i.e. high response rate of 75% for quantitative data, and the effective use of a mixed methods approach to triangulate the findings), it is not without its limitations. These limitations should be recognised and acknowledged, so that future research in this area of study can be developed accordingly.

One such limitation was the amount of time and resources that were available to the researcher when conducting the data collection. Due to certain regulations and restrictions, I was required to complete all of the data collection within a maximum of three months. In addition, as this study was conducted in a specific university (KAU) and at a specific time (the second semester), the results that were found would also be specific to this location and time, which means one could argue as to whether these findings could be used in generalising to other areas and timeframes within the Saudi context. Furthermore, this study is primarily dependent upon the perceptions of those learners that took part in the data collection and analysis. Therefore, even though their input was highly coherent and relevant to the subject matter, it has potential to limit the amount of inferences that could be made from such findings.

One apparent shortcoming that was evident prior to conducting this study is the limitations of the study sample: it is restricted to the male student population as a result of cultural and religious constraints in Saudi Arabia. This meant the perceptions and experiences of only one gender is explored. Moreover, an aspect that was highlighted within the results chapter was a number of inconsistencies in the participants' responses from the questionnaire and the focus group interviews. This could lead to contradictory views and experiences from the learners' perspectives, which would require further investigation.

In addition, there is a level of complexity when researching the collaborative learning approach within an online environment, as there are two dimensions that need to be considered: human and technological. Thus, issues surrounding subjectivity and certain challenges that are typical within the study of social sciences can lead to limitations that are unavoidable, such as those that are intrinsic within the methodology itself or the data collection tools that were used.

One other limitation that was identified within this research was the inconsistency amongst researchers over certain terms and definitions (e.g. effectiveness, collaborative and cooperative), which led to different interpretations that could be applied during the study.

6.4 Future research

In light of the limitations that have been identified in this research, and as the research highlights, the implementation of the online collaborative learning approach within the Saudi higher education context is still in its infancy stages. As a result, one may propose that there is much room for further investigation as this realm develops. In light of this, there are a number of possible avenues that could be addressed by future researchers:

- Studies of a similar nature to this may allow the findings of this research to be generalized and validated.
- This study does not include instructors and administrators; hence future research focusing exclusively on their views may be considered.
- Since this study revolves around male learners, other studies focusing on female learners may be conducted to provide a deeper insight and examination of the effectiveness of the OCL environment from their perspective and experiences.
- A longitudinal study could potentially be implemented, to provide a long-term impact on this field of research and, more specifically, on the factors related to the effective use of the OCL environment.
- Exploring the impact of an informal online collaborative learning setting on students' engagement and performance in Saudi Higher Education.
- This study is entirely based on learners' experiences, and since the experience of being enrolled in a university setting was relatively new for this sample, one may recommend that this study be conducted with students who have more experience in the university environment. This could then be used to obtain comparative results and deduce the changes, if any.
- The sample used for this study was limited to KAU, and therefore further replication of this study would be valuable at other Saudi universities as well.
- The theoretical sections included in this study created certain challenges to comprehend the relevant meanings and definitions related to effectiveness. A thorough analysis is therefore needed for the terminology included in this study.
- While this study focused on the learners' experience, the application of comparative studies to learners' performance is also possible.

- Since the instructors within the Saudi context use different teaching approaches, it would be valuable to compare these approaches with the collaborative approach and determine which is more effective. This can be extended to different comparative studies amongst universities in Saudi Arabia and also between universities across the globe.
- A Delphi study could be conducted, where those with expertise in this field could devise a developmental study regarding the effectiveness of the OCL environment, and hence, offer a model that can be utilised within higher education sectors. This proposed model would need further investigation and validation by way of experimental studies.
- Other studies surrounding the effectiveness of the OCL environment could consider factors such as multilingual and mixed genders. This particular study highlighted some major differences with respect to certain variables, but did not examine them in-depth.
- The final outcome of this study could still be deemed uncertain due to the limitations mentioned above. Thus, multiple studies are needed to document the short and long term impacts, both negative and positive, of this approach to learning.
- Certain questions raised during the course of this study indicate that other dimensions need to be included, particularly in cases of special education or special needs.
- This study could be replicated in Saudi schools from primary levels to high school to determine the factors influencing the use of the OCL environment.
- The actual interaction and collaborative efforts made by the students during online discussions could also be investigated, which would provide tangible evidence over the application and implementation of the OCL environment.

- An ethnographic study could be conducted, to observe how students use the OCL environment and examine the various stakeholders within this area of research.
- Conducting research to apply the guidelines of design collaborative activities and student assessment within an online collaborative learning environment.

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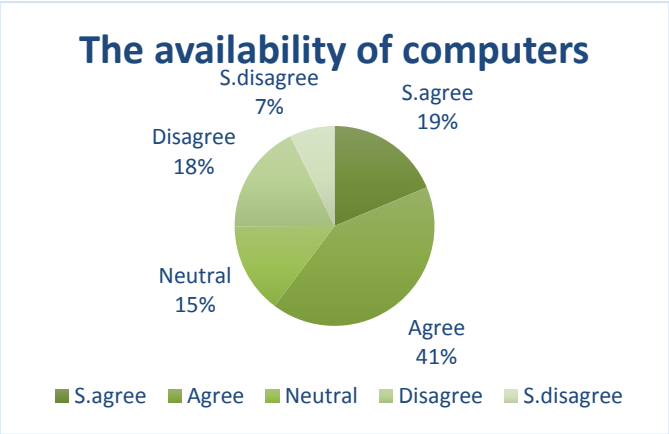
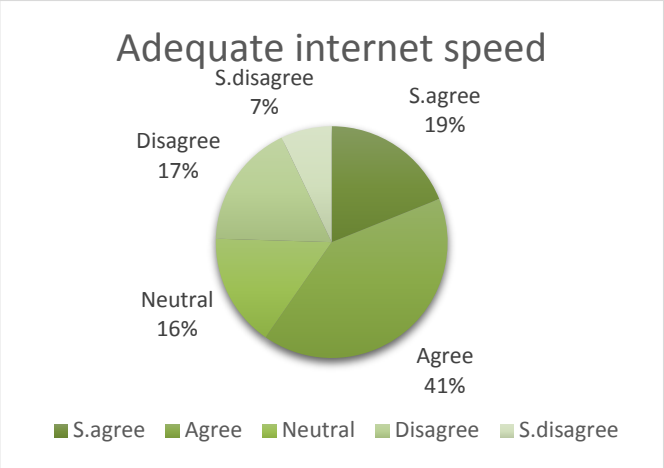
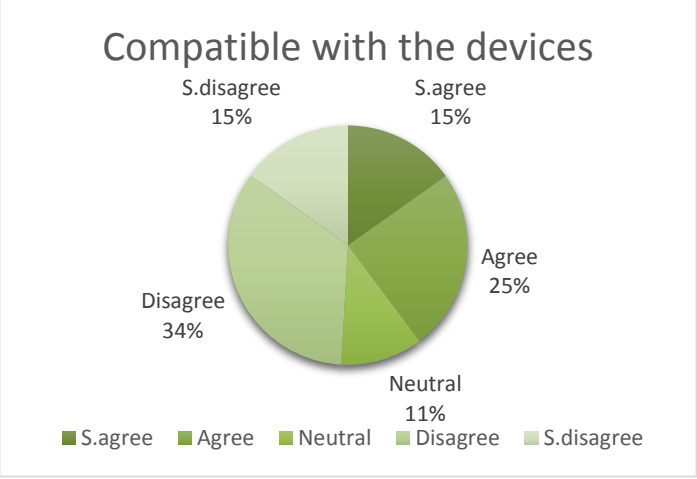
Appendices

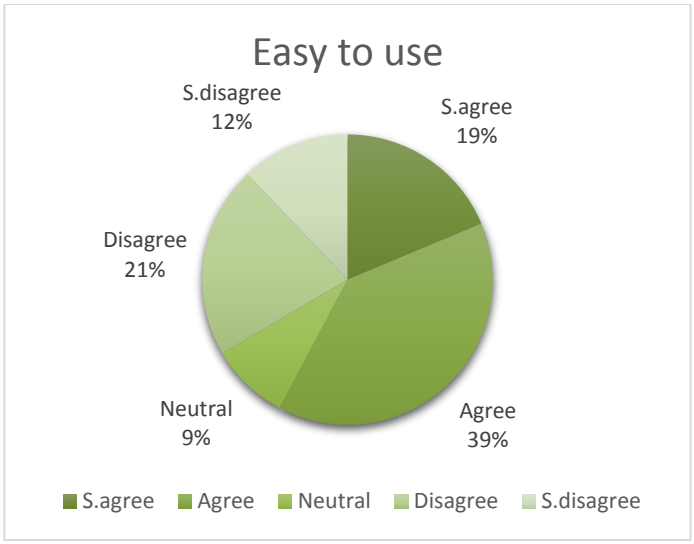
Appendix A: The LMS adopted by KAU

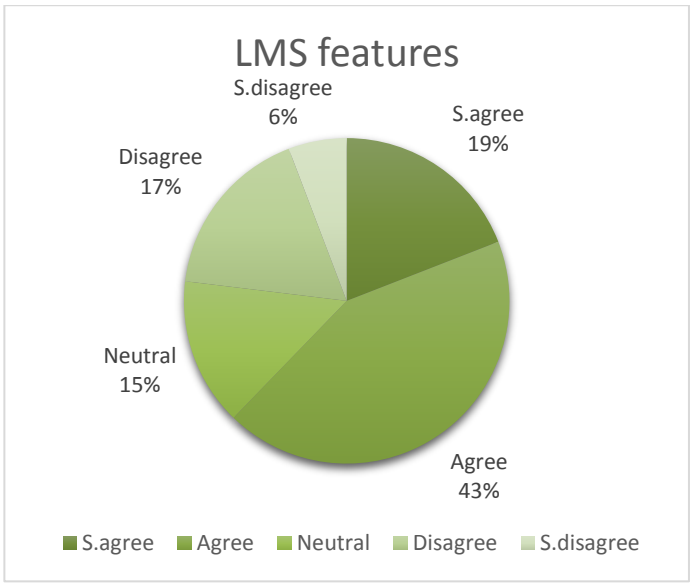
Appendix B: Visualising questionnaire

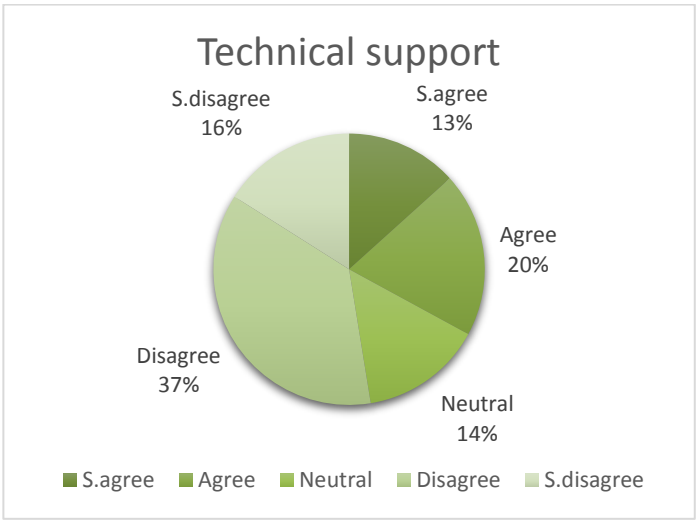


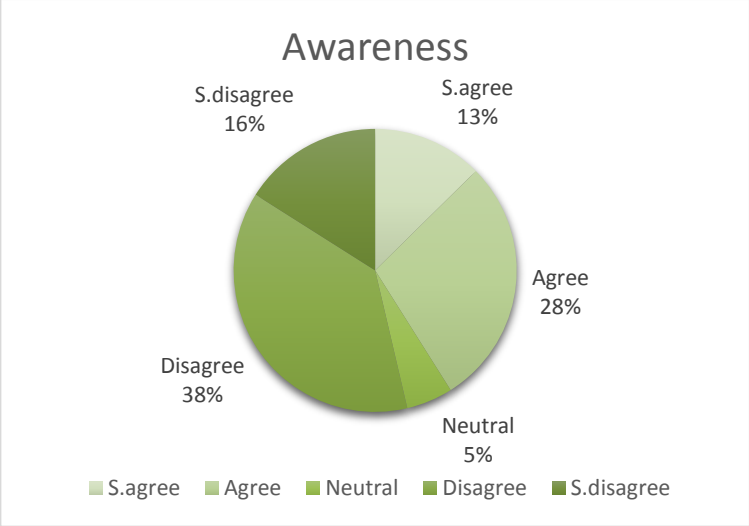


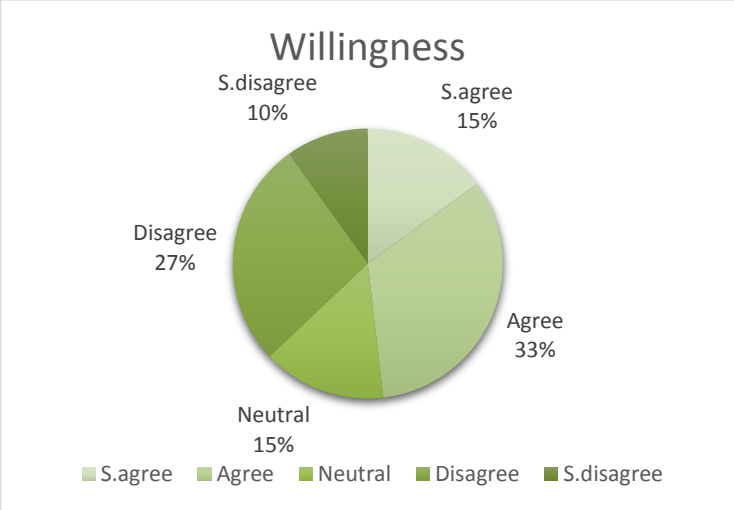


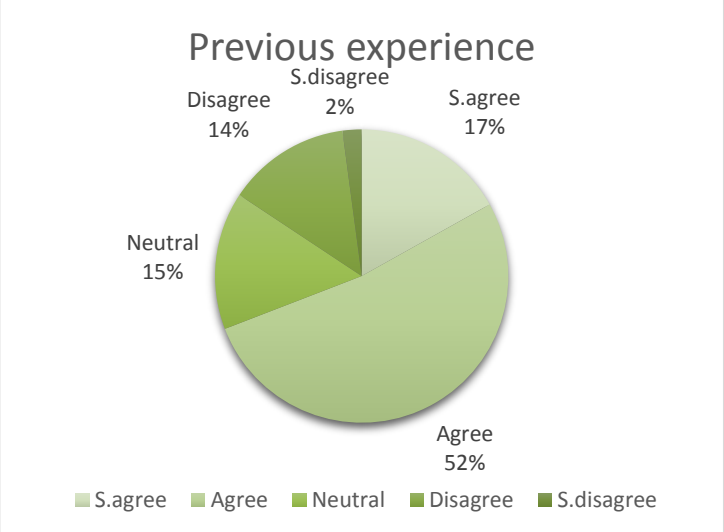

Easy to use
S.disagree
12%
S.agree
19%
Disagree
21%
Neutral
9%
Agree
39%
S.agree
Agree
Neutral
Disagree
S.disagree

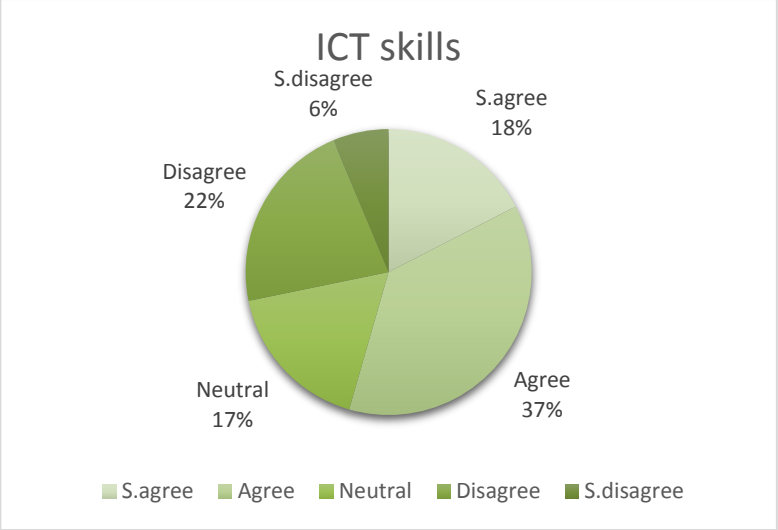

LMS features
S.disagree
6%
S.agree
19%
Disagree
17%
Neutral
15%
Agree
43%
S.agree
Agree
Neutral
Disagree
S.disagree


Technical support
S.disagree
16%
S.agree
13%
Agree
20%
Disagree
37%
Neutral
14%
S.agree
Agree
Neutral
Disagree
S.disagree


Awareness
S.disagree 16%
S.agree 13%
Agree 28%
Disagree 38%
Neutral 5%
S.agree
Agree
Neutral
Disagree
S.disagree


Willingness
S.disagree 10%
S.agree 15%
Disagree 27%
Agree 33%
Neutral 15%
S.agree
Agree
Neutral
Disagree
S.disagree


Previous experience
Disagree 14%
S.disagree 2%
S.agree 17%
Neutral 15%
Agree 52%
S.agree
Agree
Neutral
Disagree
S.disagree


ICT skills
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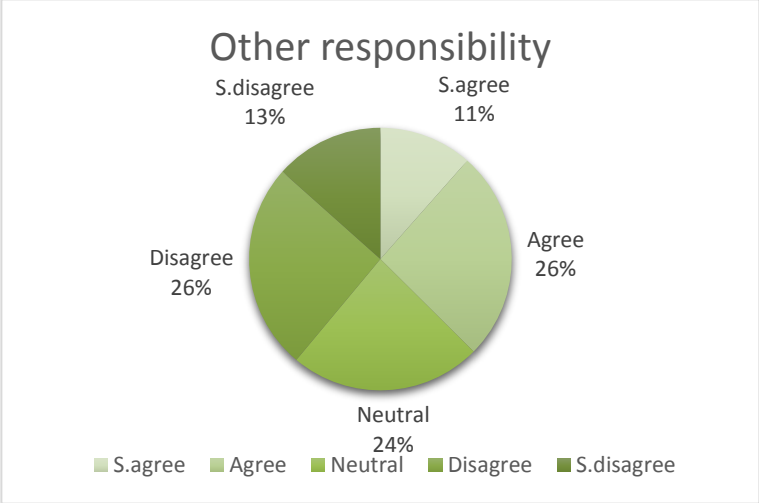
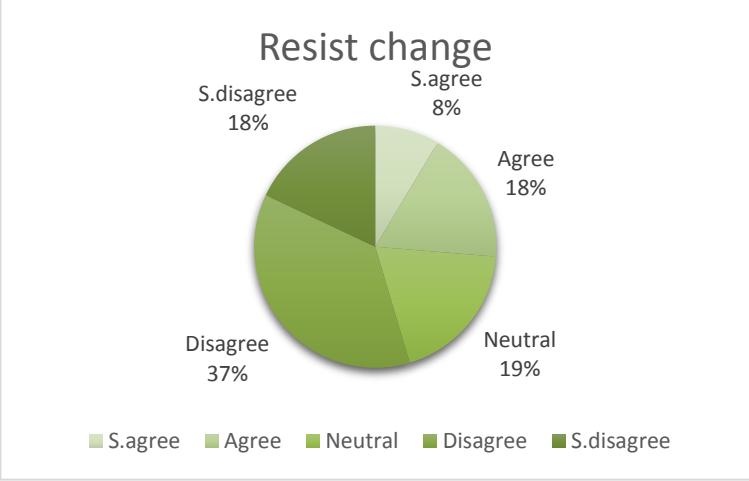
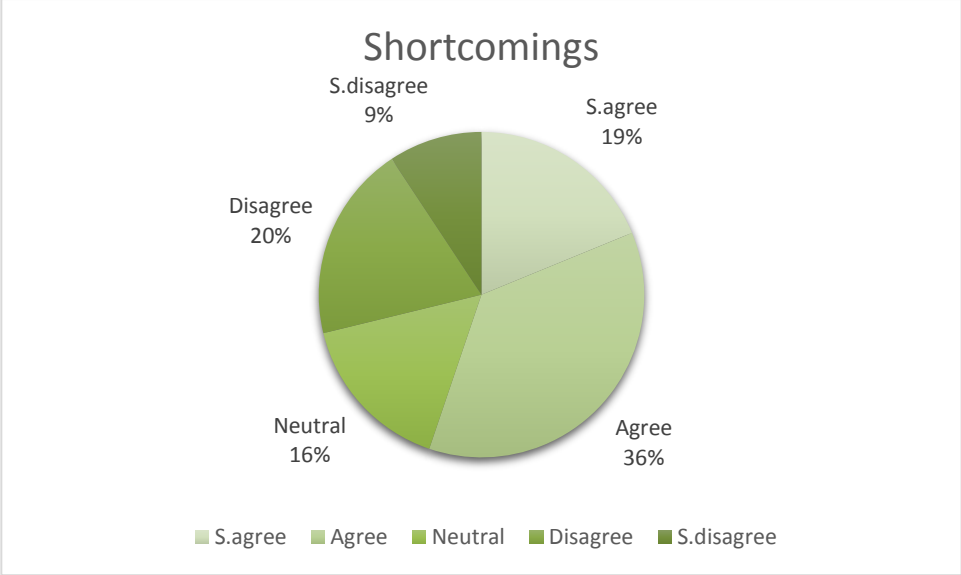
S.agree 18%
Disagree 22%
Neutral 17%
Agree 37%
S.agree
Agree
Neutral
Disagree
S.disagree


Other responsibility
S.disagree 13%
S.agree 11%
Disagree 26%
Agree 26%
Neutral 24%
S.agree
Agree
Neutral
Disagree
S.disagree


Resist change
S.disagree 18%
S.agree 8%
Agree 18%
Disagree 37%
Neutral 19%
S.agree
Agree
Neutral
Disagree
S.disagree


Shortcomings
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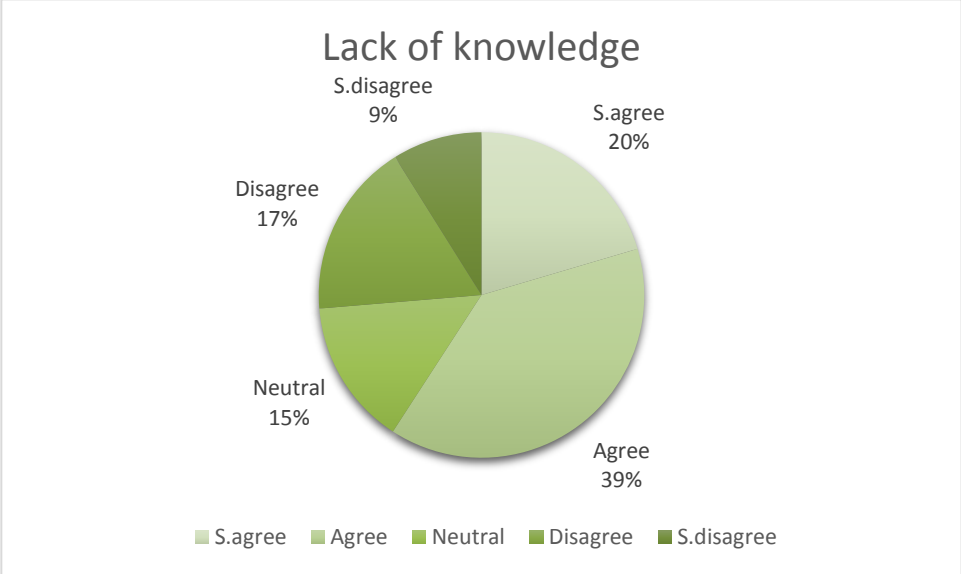
S.agree 19%
Disagree 20%
Neutral 16%
Agree 36%
S.agree
Agree
Neutral
Disagree
S.disagree


Lack of knowledge
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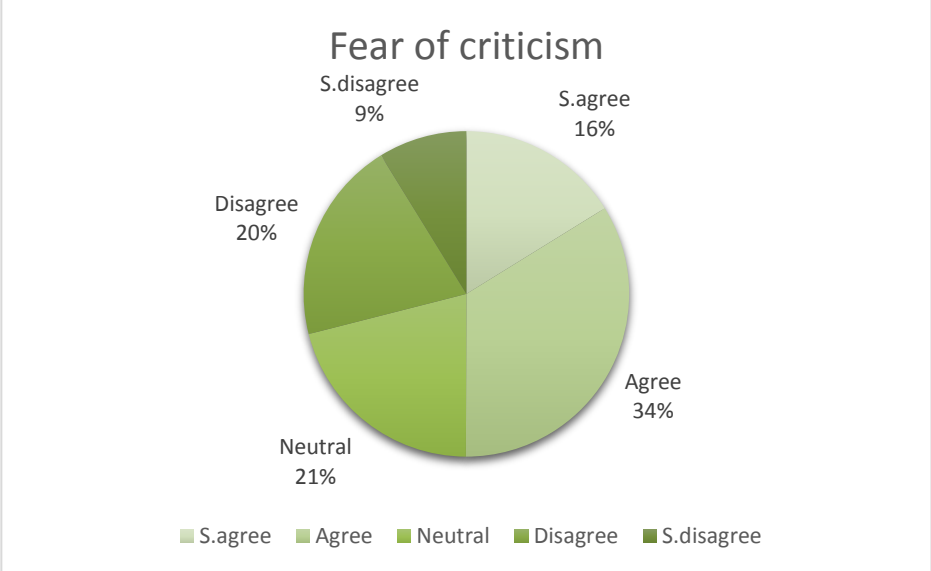
S.agree 20%
Disagree 17%
Neutral 15%
Agree 39%
S.agree
Agree
Neutral
Disagree
S.disagree


Fear of criticism
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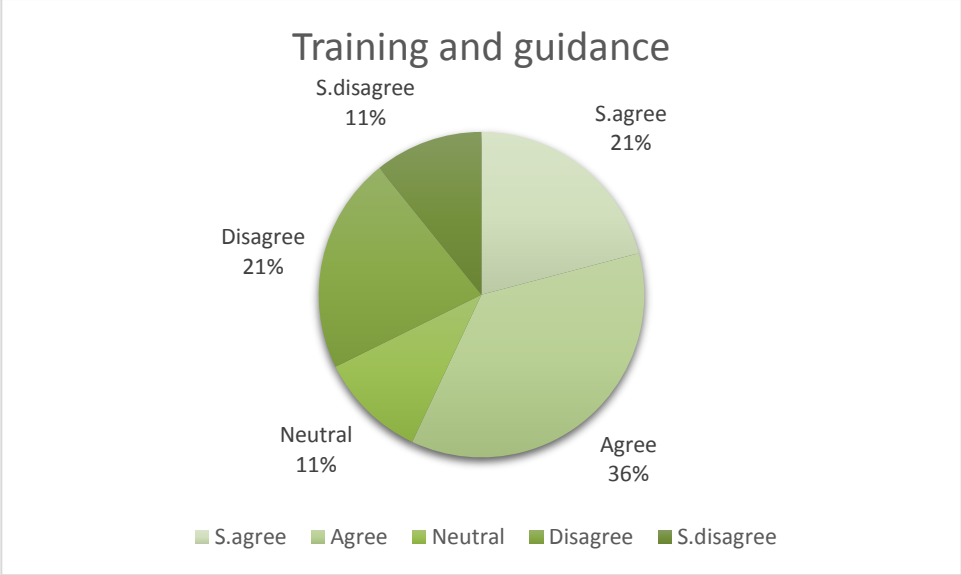
S.agree 16%
Disagree 20%
Agree 34%
Neutral 21%
S.agree
Agree
Neutral
Disagree
S.disagree


Training and guidance
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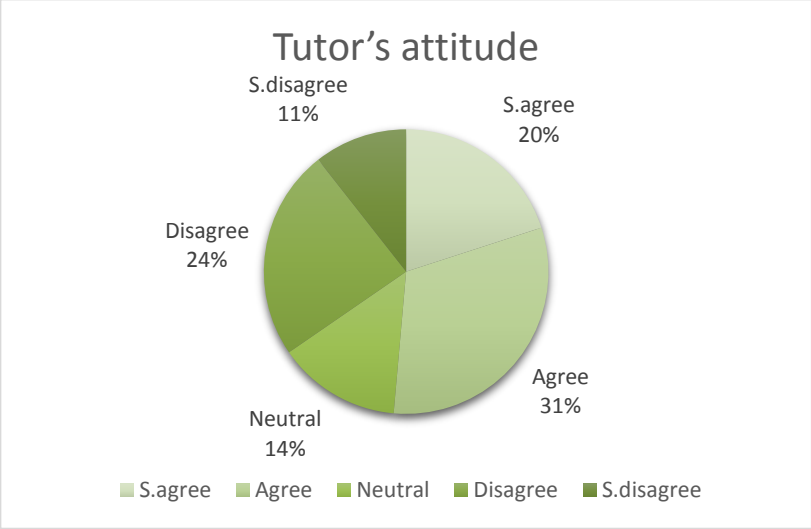
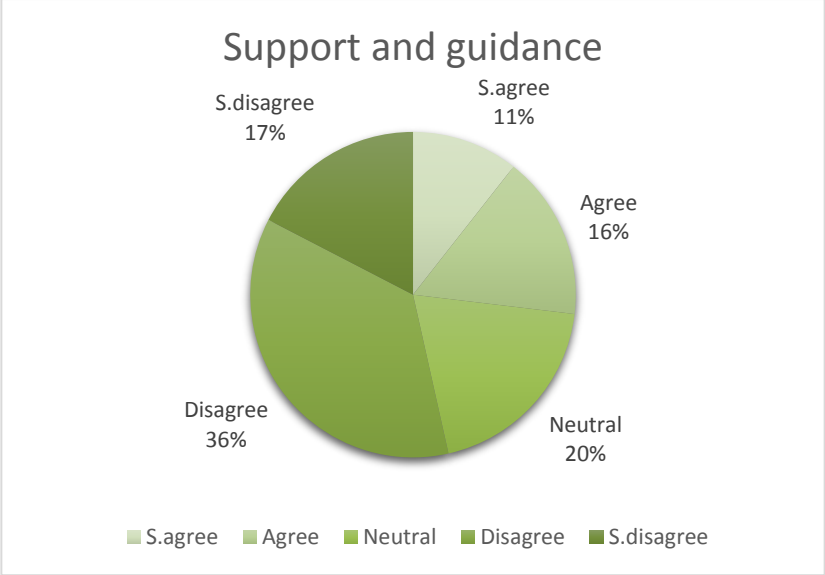
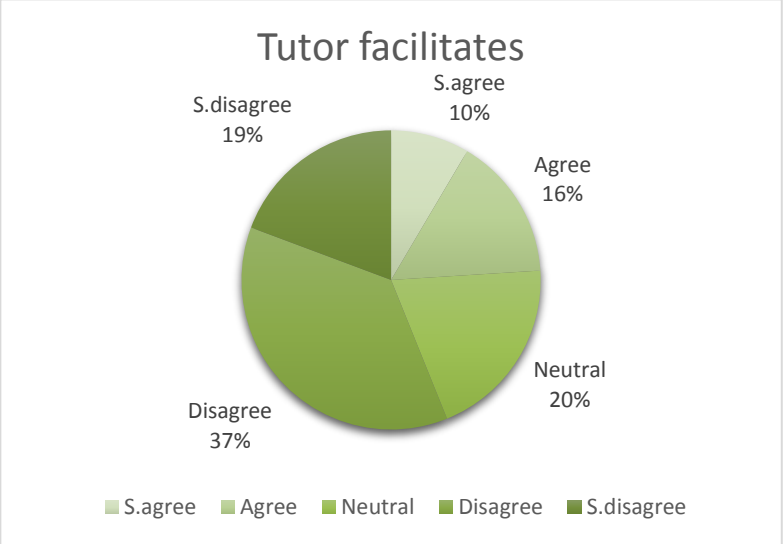
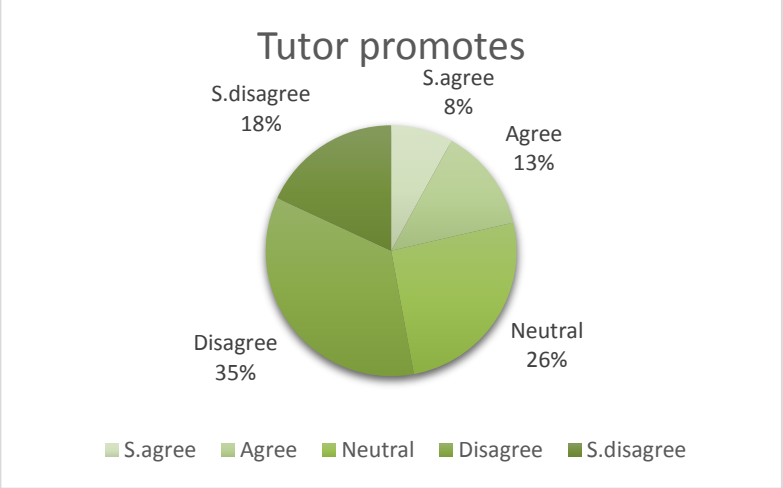
S.agree 21%
Disagree 21%
Neutral 11%
Agree 36%
S.agree
Agree
Neutral
Disagree
S.disagree

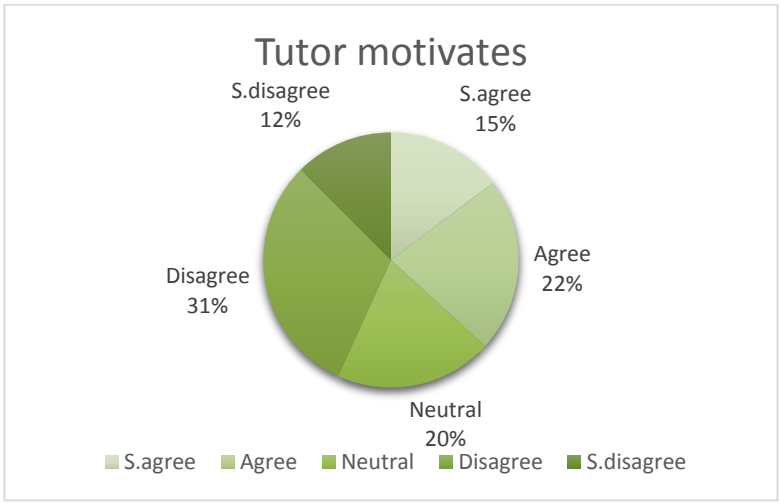

Tutor's attitude
S.disagree 11%
S.agree 20%
Disagree 24%
Agree 31%
Neutral 14%
S.agree
Agree
Neutral
Disagree
S.disagree

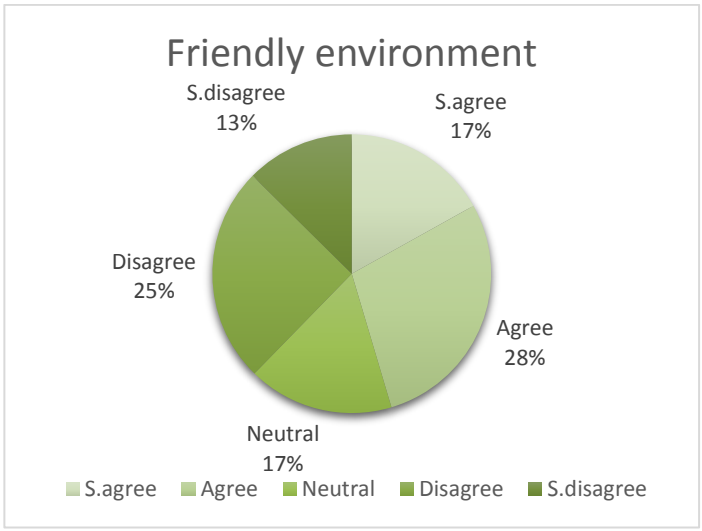

Clear objectives
S.disagree 14%
S.agree 13%
Agree 21%
Disagree 36%
Neutral 16%
S.agree
Agree
Neutral
Disagree
S.disagree

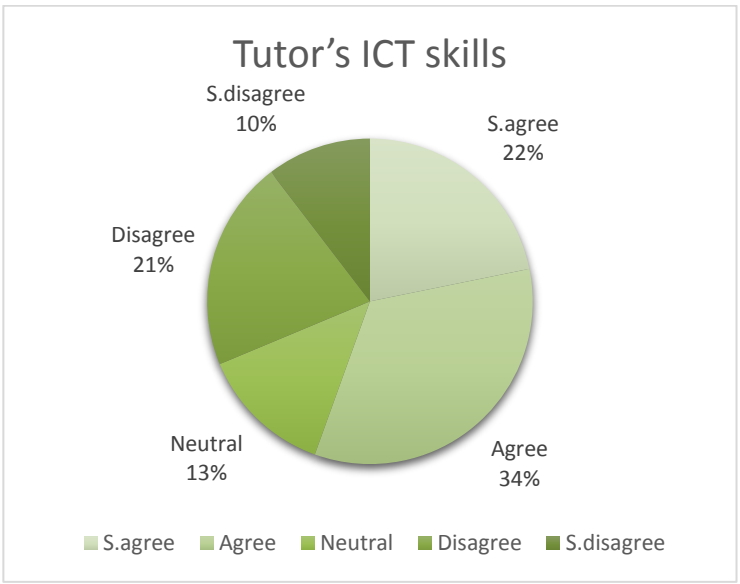

Support and guidance
S.agree 11%
Agree 16%
Neutral 20%
Disagree 36%
S.disagree 17%
S.agree
Agree
Neutral
Disagree
S.disagree

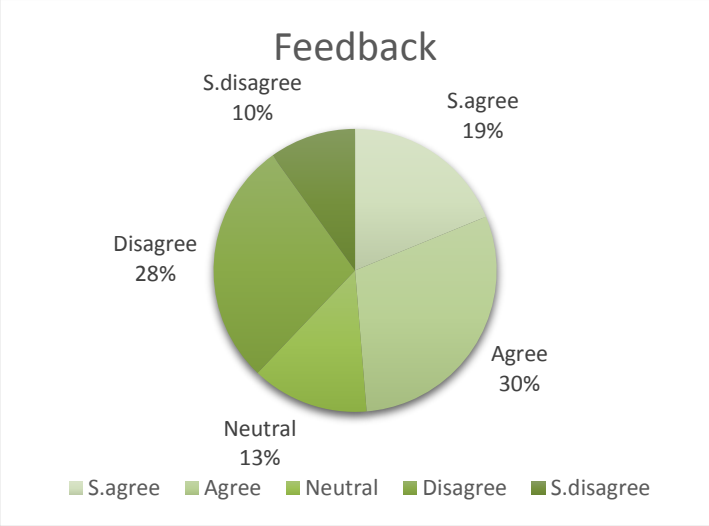

Tutor facilitates
S.agree 10%
Agree 16%
Neutral 20%
Disagree 37%
S.disagree 19%
S.agree
Agree
Neutral
Disagree
S.disagree

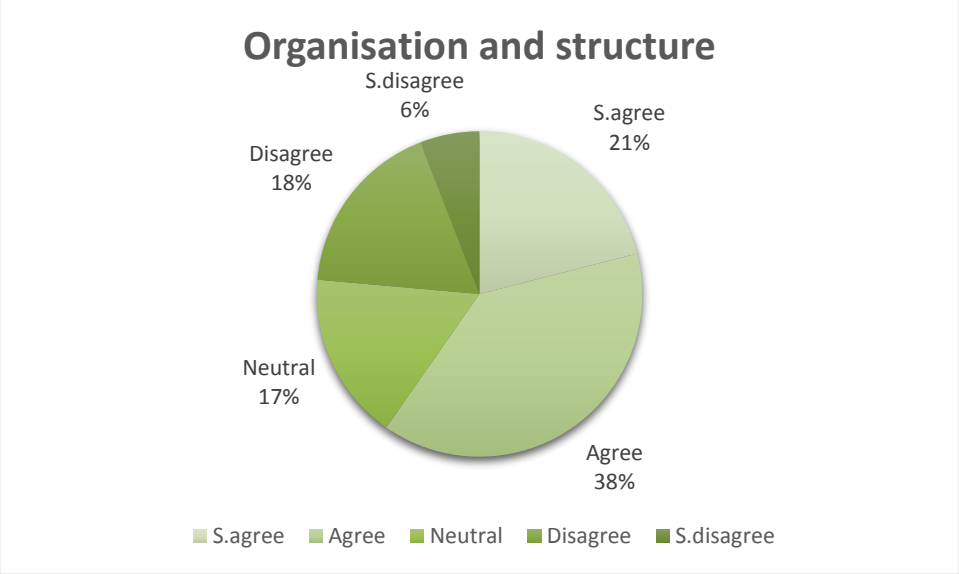

Tutor promotes
S.agree 8%
Agree 13%
Neutral 26%
Disagree 35%
S.disagree 18%
S.agree
Agree
Neutral
Disagree
S.disagree

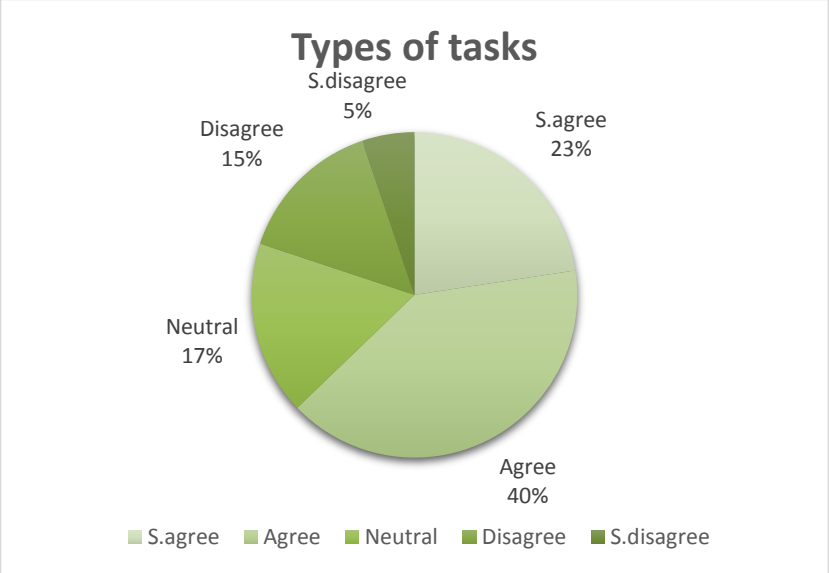

Tutor motivates
S.disagree 12%
S.agree 15%
Agree 22%
Disagree 31%
Neutral 20%
S.agree
Agree
Neutral
Disagree
S.disagree


Friendly environment
S.disagree 13%
S.agree 17%
Disagree 25%
Agree 28%
Neutral 17%
S.agree
Agree
Neutral
Disagree
S.disagree

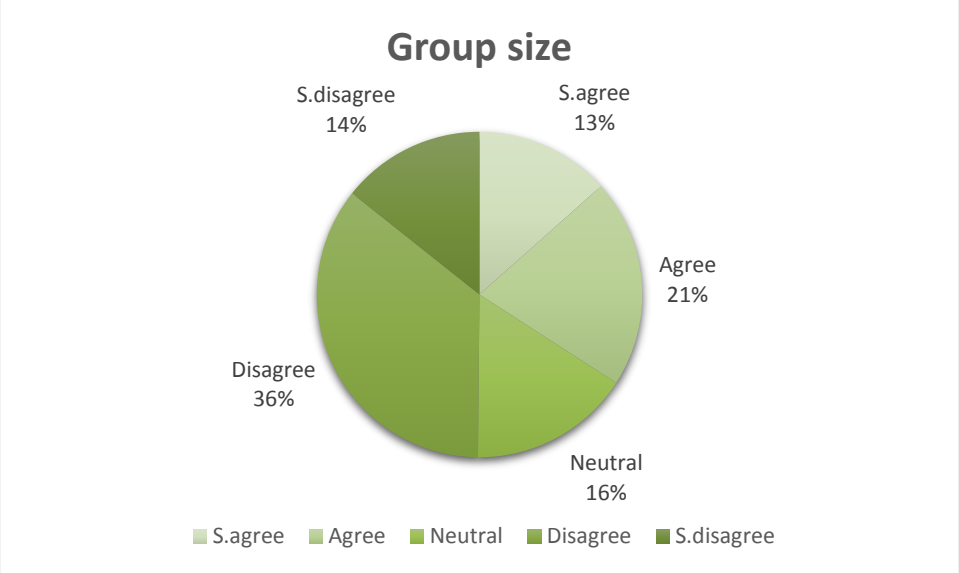

Tutor's ICT skills
S.disagree 10%
S.agree 22%
Disagree 21%
Neutral 13%
Agree 34%
S.agree
Agree
Neutral
Disagree
S.disagree

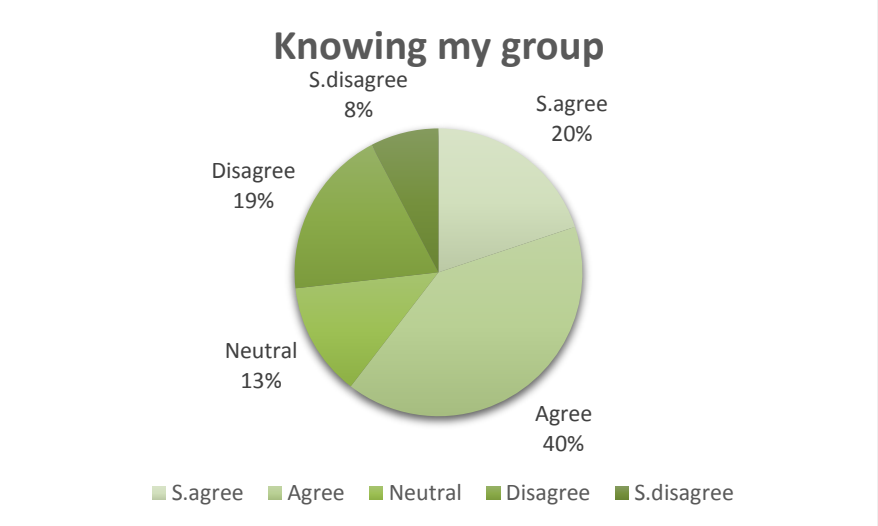

Feedback
S.disagree
10%
S.agree
19%
Disagree
28%
Agree
30%
Neutral
13%
S.agree
Agree
Neutral
Disagree
S.disagree

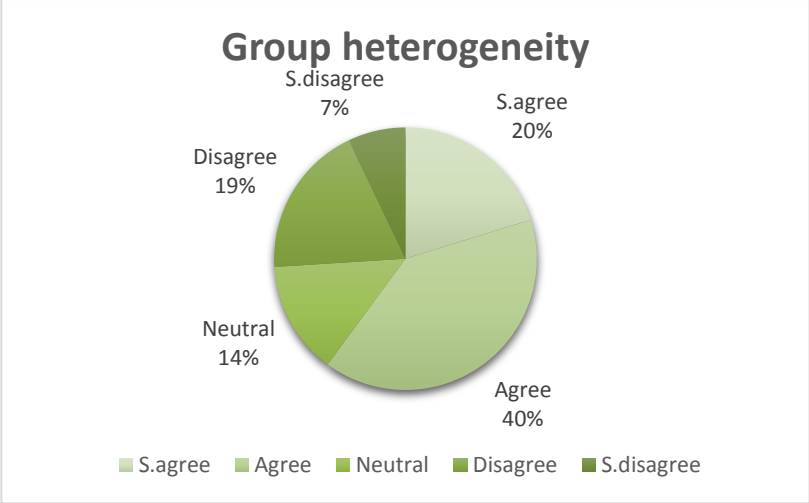

Organisation and structure
S.disagree
6%
S.agree
21%
Disagree
18%
Neutral
17%
Agree
38%
S.agree
Agree
Neutral
Disagree
S.disagree

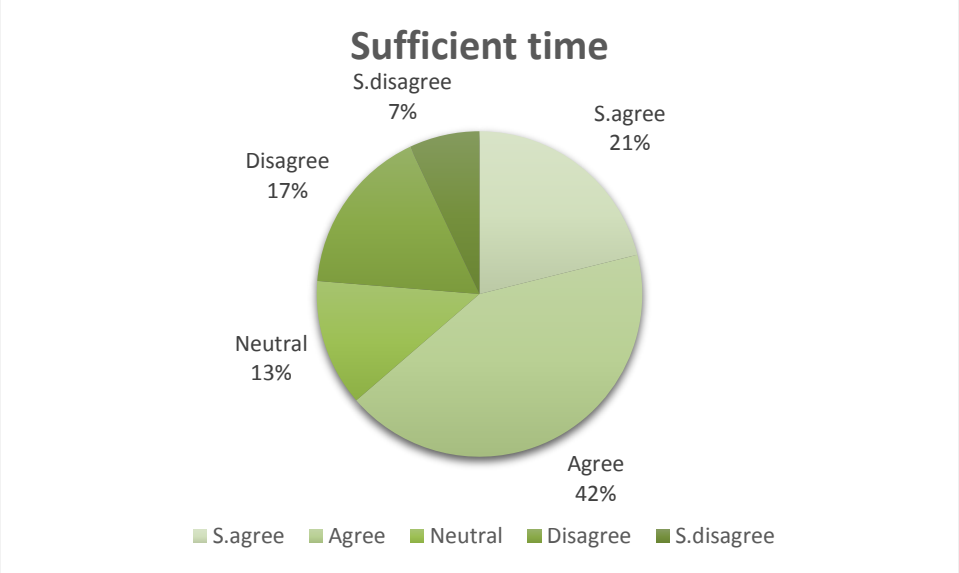

Types of tasks
S.disagree
5%
S.agree
23%
Disagree
15%
Neutral
17%
Agree
40%
S.agree
Agree
Neutral
Disagree
S.disagree

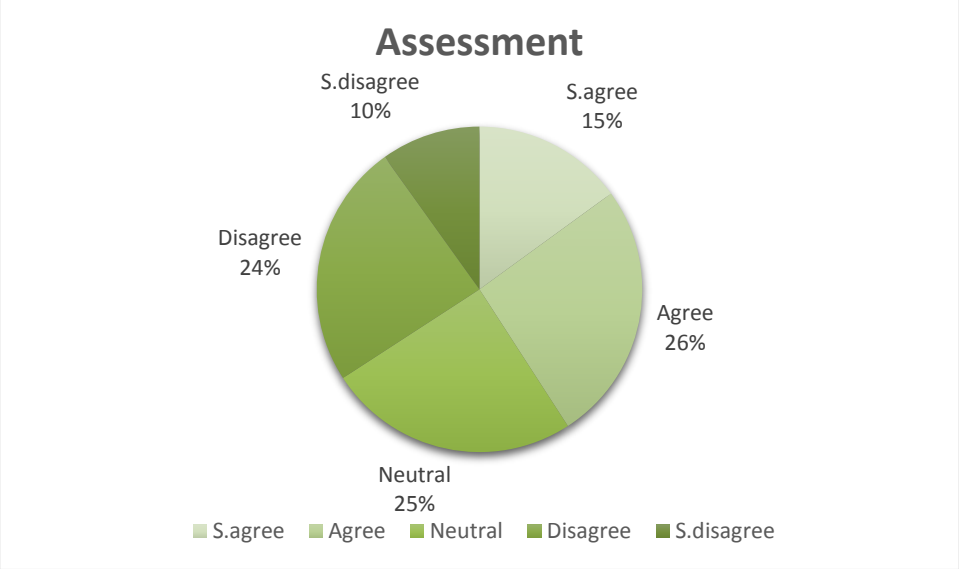

Individual accountability
S.disagree 17%
S.agree 9%
Agree 20%
Disagree 35%
Neutral 19%
S.agree
Agree
Neutral
Disagree
S.disagree


Group size
S.disagree 14%
S.agree 13%
Agree 21%
Disagree 36%
Neutral 16%
S.agree
Agree
Neutral
Disagree
S.disagree


Knowing my group
S.disagree 8%
S.agree 20%
Disagree 19%
Neutral 13%
Agree 40%
S.agree
Agree
Neutral
Disagree
S.disagree


Group heterogeneity
S.disagree 7%
S.agree 20%
Disagree 19%
Neutral 14%
Agree 40%
S.agree
Agree
Neutral
Disagree
S.disagree


Sufficient time
S.disagree 7%
S.agree 21%
Disagree 17%
Neutral 13%
Agree 42%
S.agree
Agree
Neutral
Disagree
S.disagree


Assessment
S.disagree 10%
S.agree 15%
Disagree 24%
Agree 26%
Neutral 25%
S.agree
Agree
Neutral
Disagree
S.disagree

Appendix C: Ethical approval/ Durham University

From: "Sheena Smith" <Sheena.Smith@durham.ac.uk>
Date: Monday, 10 February 2014 13:59
To: ALZAIDY.B.Z@durham.ac.uk
Cc: Steve Higgins <s.e.higgins@durham.ac.uk>,
Subject: FW: Ethics application: Bander Alzaidy

Dear Bander,

I am writing to inform you that you're application for the research project: "Factors influencing the effective use of the CL environments as experienced by Saudi students in KAU" has been approved.

Regards
Sheena

Sheena Smith
Research Office
School of Education
Durham University

Tel: (0191) 334 8403
www.dur.ac.uk/education

Appendix D: Ethical approval/ KAU

KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
KING ABDULAZIZ UNIVERSITY
: 80200, Jeddah 21589
: (+966 2) 695 2015
Fax.: (+966 2) 695 2441
http://gssr.kau.edu.sa

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبدالعزيز
ص.ب ٨٠٢٠٠ : جدة ٢١٥٨٩
(+٩٦٦ ٢) ٦٩٥٢٠١٥
فاكس : (+٩٦٦ ٢) ٦٩٥٢٤٤١
E-Mail: research@kau.edu.sa

مكتب وكيل الجامعة للدراسات العليا والبحث العلمي
Office of the Vice President for Graduate Studies and Research

سعادة الملحق الثقافي السعودي بسفارة خادم الحرمين الشريفين   حفظه الله
المملكة المتحدة

TBU 026/2
الدراسات العليا

السلام عليكم ورحمة الله وبركاته ...

وكالة جامعة الملك عبدالعزيز للدراسات العليا والبحث العلمي تهديكم تحياتها وتقديرها، وبخصوص النظر في طلب المبتعث / بندر بن زايد بن عوض الله الزايدي، المبتعث للدراسة بالمملكة المتحدة من وزارة التعليم العالي للحصول على درجة الدكتوراه في تخصص تقنية المعلومات والاتصالات في التعليم بجامعة درم، وحيث إن المبتعث قد قدم طلباً لإجراء مقابلات وتطبيق استبانه متعلقة بأطروحته للقيام بها في جامعة الملك عبدالعزيز.

عليه .. تفيد سعادتكم بأنه لا مانع لدى الجامعة بتسهيل تطبيق البحث المقدم من المبتعث بجامعة الملك عبدالعزيز.

وتقبلوا خالص تحياتي وتقديري ...

١/١٠

وكيل الجامعة
للدراسات العليا والبحث العلمي

أ.د/ عدنان بن حمزة محمد زاهد

رقم الوارد الصادر 35/7763هـ

التاريخ : 1435/01/11
الرقم : 35/7763
Encl : المشفوعات :
Date التاريخ : ١١/١/٣٥

Appendix E Rotated Factor Matrix[a]

	Factor			
	1	2	3	4
Factor1:Technology related factor				
Availability of computers	.039	-.004	.015	.909
Adequate internet speed	.035	.004	.027	.923
LMS is compatible with the devices	-.006	-.013	-.002	.853
The LMS is easy to use	.043	.043	.037	.928
OCL tools existing	.023	.000	.032	.939
Adequate and immediate technical support	-.006	-.044	.014	.811
Factor2: students' characteristics				
Awareness	-.003	.915	.080	.017
Willingness	-.005	.921	.007	-.005
Previous experience	.027	.301	.083	-.010
ICT skills	-.012	.817	-.041	-.017
Other responsibility	.005	.908	.059	.043
Resist change	-.006	.752	.042	.011
Shortcomings in my collaborative skills	-.013	.873	.003	-.009
Lack of knowledge	-.006	.841	-.006	-.026
Fear of criticism from peers	-.022	.763	.043	-.015
Training and guidance	-.034	.710	.080	.004
Factor3: tutor's role				
The tutor's attitude towards OCL	.829	.016	.005	.025
Clear and appropriate objectives	.908	-.016	.038	.047
Adequate and appropriate support and guidance	.875	-.009	.033	.014
The tutor monitors and facilitates without directly interfering	.835	-.013	.022	-.026
Lecturer encourage collective	.818	-.004	.014	-.012
The tutor motivates and encourages me to contribute	.900	-.040	.003	.030
The tutor actively cultivates a warm and friendly OCL	.842	-.001	.016	.024
The tutor's ICT skills and competency in using LMS tools	.816	.028	.020	.005
Provide prompt feedback	.875	-.005	.018	.039
Factor4: Course characteristics				
The organisation and structure of the task	.040	.090	.918	.011
The type of task (i.e. discussion)	.041	.070	.868	.006
Distribution of tasks and Individual accountability	.068	-.042	.434	.006
From my experience in using group size (4-5 individuals) is more suitable	.058	.073	.858	.054
Knowing my group members encourage me to participate	-.029	.102	.936	.015
The homogeneity within a group	-.024	.103	.923	.026
Sufficient time	-.019	.072	.893	.026
Assessments	-.034	.014	.836	-.009

Extraction Method: Principal Components Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.