

THE UNIVERSITY OF HULL

**Evaluation of the use of ICT to support students' learning
and communication in a Saudi Arabian higher education
institution: conflicts, contrasts and tensions in lecturers'
perspectives**

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by

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Abstract

This thesis explores lecturers' views on the main issues surrounding their use of information and communications technology (ICT) to support students' learning and communication in Jeddah University. It also identifies lecturers' pedagogical beliefs in terms of using ICT in the classroom and explores the factors that might influence their use of ICT to support students' learning and communication.

A mixed-methods, two-phase research design, comprising a survey (n=160) of male and female lecturers and semi-structured interviews (n=16) with female lecturers only, was conducted. Using SPSS for the quantitative data, the results were analysed using thematic analysis.

The analysis of the collected data resulted in several findings indicating that there are tensions between lecturers' views on using ICT and what they claim to practise in the classroom. These tensions demonstrate contrasts in lecturers' views in relation to many factors that may hinder their integration of ICT. These tensions are presented in the context of internal factors, such as pedagogical beliefs, attitudes and ICT skills, and external factors, for example ineffective ICT integration policy, university culture, and a lack of technical support, training and resources.

The findings suggest that lecturers' use of ICT to support students' learning and communication faces a number of issues, such as tensions between the lecturers' stated beliefs, practices, and the above-mentioned internal and external barriers. The study explores the main issues around lecturers' use of ICT to support students' communication in the light of a range of learning theories, as well as ICT acceptance models and the TPACK framework. Finally, the discussion leads to evaluating how facilitating lecturers' use of ICT might be advantageous in moving towards a broadening of the pedagogical culture in Saudi Arabia.

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Declaration

I, Nora Mohammed Alabadi, declare that the work presented in this thesis is my work and that the PhD thesis entitled “Evaluation of the use of ICT to support students’ learning and communication in a Saudi Arabian higher education institution: conflicts, contrasts and tensions in lecturers’ perspectives” is my own work.

Signature: Nora Alabadi

Date:

Glossary

Definitions of Terms and Abbreviations

Some terms and abbreviations are used in this study and are explained below to help the reader's understanding of this thesis.

Abbreviations

ICT	Information and Communications Technology
KSA	Kingdom of Saudi Arabia
MOHE	Saudi Ministry of Higher Education
TAM	Technology Acceptance Model
TPACK	Technological Pedagogical Content Knowledge
UTAUT	Unified Theory of Acceptance and Use of Technology

Definitions

ICT: Noor-Ul-Amin (2013) defines ICT as a strategic resource for teaching and learning environments and its potential to become a major instrument for developing the quality of education. Elements necessary for the effective use of ICT include hardware (such as computers, interactive whiteboards, digital cameras, projectors and scanners), software (such as word processor programs) and communication networks (such as the Internet and email) virtual learning environments (VLEs), such as Blackboard, wikis, blogs, mobile devices, and social networking.

Student-centred approach: In a “learner-centred classroom, developmentally appropriate activities are designed to help students use the thinking and learning strategies they will need to succeed in both school and in life. In a learner-centred system, standards are established, and each child is expected to achieve those standards. The time required to master skills may vary, but the standards do not” (Schrenko, 1994:28).

Teacher-centred approach: According to Zohrabi et al. (2012), in this type of traditional teaching, lecturers' roles are akin to those of authorities, leaders, and assessors. The roles the students' play is those of followers and subordinates.

Thematic analysis can be described as a kind of qualitative analysis used in the classification and presentation of themes (patterns) relative to raw data. This approach has the ability to illustrate data in detail and utilise interpretation in handling diverse subject matter. Moreover, this type of analysis goes further in including an interpretation of the different features of the research topic (Braun & Clarke, 2006).

CHAPTER ONE

THE BEGINNING OF THE JOURNEY

1.1 Introduction

Information and communications technology (ICT) integration has been argued to have a positive effect on higher education effect on higher education (Agrawal & Mittal, 2018; Dintoe, 2018). Also, it has had a very high-profile effect on students' learning for personal development. However, many studies have been undertaken which indicate low-level ICT use by lecturers (Al Mulhim, 2014; Umar & Hassan, 2015). As discussed further in the literature review in Chapter Four, there are many issues identified as barriers for lecturers who wish to integrate ICT in their teaching, from lecturers' personal beliefs regarding ICT to the availability of technological devices. The various examples of barriers to ICT use are grouped into two main categories: internal and external (Ertmer, 1999).

This thesis is investigation of lecturers' views on the main issues around their use of ICT to support students' learning and communication, including lecturers' pedagogical beliefs as reported in their use of ICT to support students' communication and factors that lecturers view as influencing their use of ICT to support students' learning and communication. Integrating ICT in the classroom requires identification of the specific factors and issues that affect ICT use and an investigation of how lecturers employ ICT applications (Agbo, 2015). This research investigates the main issues around lecturers' use of ICT to support students' learning and communication.

Vygotsky (1987) believed that people construct knowledge from social interaction and communication and other active processes and the lecturer's role is to develop students' skills in becoming effective communicators. Lecturers have an important role in assisting students to develop their ability to discuss and collaborate in order to exchange ideas (Kreijns et al., 2003), as these skills are needed for success in 21st-century life and work in media and technology. The abilities necessary include those linked to communication and collaboration, together with skills in critical thinking and problem solving (Pheeraphan, 2013) as discussed in Chapter Four (section 4.2.1).

The above view is of concern in Saudi Arabia since, according to the Kingdom's Vision 2030 (2016) development plan, "effective communication between different students is helpful in cultural exchange, peace prevalence, and good welfare". The

Minister for Saudi Higher Education has called on lecturers to support students' learning and communication. At present, a traditional teacher-centred approach is still practised in the higher education teaching environment in Saudi Arabia (Idris, 2016). This approach may not equip students with the skills needed for critical thinking, social interaction, effective communication, teamwork, continuous learning, and technology use to facilitate participation in the global knowledge economy and become productive global citizens.

Extensive changes have occurred in the way education systems are resourced in higher education in Saudi Arabia. Over the past decade, the use of technologies, including ICT, has become commonplace in all aspects of life. It has become increasingly important for lecturers to acquire ICT skills if they are use technology to support students' communication. In the 21st century, ICT is used to accelerate global competition and collaboration. Noor-Ul-Amin (2013) reviewed the effective use of ICT as a strategic resource for teaching and learning environments and its potential to become a major instrument for developing the quality of education. Elements necessary for the effective use of ICT include hardware (such as computers, interactive whiteboards, digital cameras, projectors and scanners), software (such as word processor programs) and communication networks (such as the Internet and email).

Evidence from research has shown that the use of such resources in the classroom can, in appropriate circumstances, improve the ICT skills of students and lecturers (Meenakshi, 2013; Majumdar, 2015). There are other potential advantages to using ICT in the classroom, such as encouraging collaborative work and interaction. Pheeraphan (2013) noted that the effectiveness of ICT integration, collaboration and communication depends on the pedagogy used in the classroom. Moreover, she observed that:

“Effective integration of ICT provides tools and environments that support active learning, exploring and experimenting, thinking and working creatively, constructing and creating new knowledge, reflecting and planning, using feedback and self-assessment, communicating with others, supporting and developing collaborative projects, working interactively in classroom and public” (Pheeraphan, 2013: 367).

1.2 Researcher's Background and Relationship to the Research

Since 2013, I have been a Faculty of Education staff member at Jeddah University in Saudi Arabia. One of the major roles I play at the university is teaching communication

skills. My continuing involvement with ICT prompted me to develop my pedagogy and this generated my research interest in the use of ICT to support students' communication.

When I became a lecturer at Jeddah University, I discovered that the number of academic staffs utilising technology such as PowerPoint in teaching their students was quite limited. However, I regularly used ICT, such as software, the Internet and other technologies in the classroom and, in my experience, these resources have many benefits. My success in using ICT is the inspiration behind this study, in which I explore the potential of further ICT use to support communication. My goal with this research is to improve my skills as a lecturer and provide insights into this area of teaching by widening the discussion about using ICT in the classroom to support communication. Communication is essential for students and lecturers, since this ability is a necessary part of effective participation in the academic world, family life, the workplace and community involvement. The purpose of this study is to investigate university lecturers' pedagogical beliefs regarding the impact of ICT on students' communication and the issues that might lecturers face when using ICT to support these skills in the classroom.

I have tried to ensure the reliability of the findings in this study by understanding my personal views and working hard to make sure that they do not affect the conclusions reached in my work. I have also been conscious at all stages of the writing of this thesis that I have a personal interest in and enthusiasm for using ICT and have, therefore, been especially careful not to let my own views intrude. Nevertheless, it would be appropriate here to acknowledge my own values in relation to the topic of study. I believe that effective lecturers can use a wide variety of learning and teaching approaches but it can be a challenge for lecturers to match learning needs effectively through teaching strategies.

Nevertheless, we lecturers must open our minds to be willing to adapt our instructional approaches to accommodate students' learning preferences, since students differ, not only in terms of knowledge, but also in attitudes, interests and maturity. We should also be open-minded as to the potential of new approaches and to the broadening of pedagogical approaches to support academic achievement (Tulbure, 2012). My interest lies in the potential of ICT to help in meeting these needs.

The standard method of teaching at Jeddah University at the time this study was conducted was teacher-centred, with students having little chance to participate or make contributions during discussions and lessons. My limited experience nonetheless

suggested the potential value of a more student-centred approach to support communication. Better access to ICT and a programme of training lecturers in the use of ICT tools, together with a government policy that favours additional ICT integration in education, are among the conditions that are now in place for the successful integration of technology in Saudi Arabian universities (Ministry of Higher Education, 2015). King Abdullah's Public Education Development Project has also started to run training and development programmes for lecturers, with the aim of promoting ICT use in education (Tatweer, 2015). However, most of this training focuses on basic ICT skills. This is discussed in more detail in Chapter Ten, section 10.2.2 of this thesis. Approximately 25% of the entire 2015 Saudi government budget (over £36 billion) has been targeted at the educational sector; moreover, this funding was focused mainly on technology implementation in the educational curriculum and the development of ICT facilities in terms of accessing ICT in higher education (Ministry of Finance, 2014). Nonetheless, the evidence suggests that low ICT use in teaching exists, in spite of the financial investment (Al Mulhem, 2014). These issues are discussed in more detail in Chapter Four. Such concerns lend importance to this study, which explores lecturers' perspectives and the factors that influence their views.

1.3 Research Aims and Objectives

The aim of this study is to explore lecturers' views on the main issues around the use of ICT to support students' learning and communication in Jeddah University. The main reason for conducting this research was to identify lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication in Jeddah University and, in particular, which pedagogical beliefs might influence the lecturers' reported practice in their use of ICT in teaching. Finally, this study investigates the factors that might influence the lecturers' use of ICT to support students' learning and communication.

1.4 Main Research Question

What are the main issues around lecturers' use of ICT to support students' learning and communication?

Sub-Research Questions

- 1) What are lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?
- 2) To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?
- 3) Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

1.5 Rationale and Significance of the Study

By investigating the views of lecturers with regard to their use of ICT to support students' communication, this empirical study aims to increase understanding of why ICT has not been used more widely in Saudi Arabia. By analysing lecturers' views on what might be preventing the adoption of ICT, as well as their attitudes towards implementing pedagogical change, this study is intended to identify the main issues around lecturers' use of ICT to support students' learning and communication in the classroom. This study may be useful for:

- 1) Lecturers in Saudi Arabia who seek to encourage the use of teaching and learning strategies that support students.
- 2) Lecturers in Saudi Arabia who are enthusiastic about using ICT in teaching and learning.
- 3) Making recommendations to policy makers in the Ministry of Education so that strategies can be developed to enhance teaching methods when using ICT in universities for teaching purposes. The results of the current study could help policy makers in the Ministry of Education of Saudi Arabia and other countries in the region to understand more comprehensively the opinions of lecturers with respect to the use of ICT as a learning tool, as this knowledge would allow the ministry to make informed decisions regarding policy.
- 4) Identifying what is preventing the use of ICT tools as a means of supporting better communication at Saudi universities.

Limited attention has been given to the pedagogical beliefs of Saudi lecturers when deciding whether to incorporate ICT into classrooms and to university lecturers' challenges related to issues of knowledge and experience. Therefore, there are serious questions for educators and decision makers about the barriers hindering successful ICT implementation and how best to support ICT stakeholders.

This study adopts a holistic mixed-methods approach (Tashakkori & Teddlie, 2010; Creswell & Plano Clark, 2011). This study is unique in the context of Saudi educational research, as its method of collecting information from natural settings is intended to provide an insightful perspective into the beliefs of lecturers. The strength of the results was a product of the use of self-reporting questionnaires and semi-structured interviews conducted by the researcher.

1.6 Research Gap

An extensive literature review was explored by searching electronic databases, peer-reviewed journals, Google Scholar and Summon. The following keywords were used to obtain data: university, ICT, lecturer skills, social interaction and communication and lecturers' beliefs. In order to understand patterns of ICT use, it was necessary to consider the views of lecturers and the issues they might face when they use ICT in the classroom. As the Saudi context in Chapter Two shows, research in Saudi higher education has tended to focus on the benefits of implementing ICT use in the classroom. However, studies have also discovered certain issues that arise from using ICT in higher education. The literature review reveals few empirical studies regarding the use of ICT to support students' communication within the Saudi education system. Nor have studies been performed that investigate Saudi lecturers' views regarding their beliefs and attitudes towards ICT (Elyas & Picard, 2010; Allamnahrah, 2013).

The above factors sit alongside a general resistance to the use of ICT to support students' learning and communication. It has also been argued that there is nothing inherently wrong with teacher-centred approaches themselves (Grami, 2012). This will be considered in more detail later in the thesis when the value of teacher-centred approaches is discussed in Chapter Three. Furthermore, no research has been performed concerning the factors that might facilitate the acceptance and use of ICT in Jeddah University to support students' learning and communication, although these factors might be accepted as a core element in the higher education.

There is also a lack of research investigating the views of lecturers regarding ICT use in classrooms for supporting learning and communication. In higher education

in Saudi Arabia, lecturers' views on ICT use in higher education remain unexplored. Evidence from international research gives an overview of ICT integration in higher education; however, research is lacking that investigates lecturers' views on using ICT in higher education in Saudi Arabia. This study intends to remedy this research gap by identifying and explaining lecturers' views and gaining insight into what influences their decisions towards using ICT in Saudi higher education classrooms to support learning and communication.

A number of models and theories exist which could help lecturers and policy makers understand the barriers to and enablers of ICT integration and their relationships to each other. These include the Technology Acceptance Model (TAM) (Davis et al., 1989), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and the Technological Pedagogical and Content Knowledge (TPACK) model (Mishra & Koehler, 2006). These models and theories were used to guide the research and help in interpreting the data. The TAM and UTAUT models deal with lecturers' acceptance of the use of ICT and are important in investigating knowledge, the content of pedagogy and ICT. TPACK was used in order to unpack knowledge of content and ICT that a lecturer needs to develop in order to integrate ICT successfully into learning and teaching.

The Saudi Ministry of Higher Education (2015) has stated that there are fast and continual technological advances that have increased the opportunities for higher education in Saudi Arabia. Research has previously been conducted into ICT use in the context of higher education in Saudi. This study will add to the evidential research on the factors influencing the decisions of Saudi lecturers in adopting and integrating ICT into their teaching. Decisions regarding whether and/or how to use ICT in education are left to classroom or subject lecturers. The focus here is on understanding Saudi lecturers' views on ICT use to support learning and communication.

1.7 Structure of the Thesis

The purpose of this section is to set out a coherent framework of the presentation of the thesis within its twelve chapters. The purpose of each chapter is described below.

Chapter One is an introduction to the study as a whole. It identifies the research questions and objectives, discusses the justification for the study and provides background information.

Chapter Two explains the context of the study. The chapter provides a short account of the history of Saudi Arabia and outlines its education system. It examines the impact of religion and culture on teaching and learning approaches and discusses the integration of ICT into the higher education context.

Chapter Three is the first part of the literature review and presents the theoretical perspectives underpinning the study.

Chapter Four is the second part of the literature review and considers the practice and issues related to lecturers' ICT use, as well as the factors that seem to influence and affect the use of ICT by lecturers.

Chapter Five presents the philosophical foundations of the study.

Chapter Six explains how data were collected using a questionnaire. The chapter also details the actions taken to ensure the validity and reliability of the questionnaire as a data collection instrument and ethical issues related to the process.

Chapter Seven discusses the qualitative data collected during the interviews, the trustworthiness of the study, as well as the ethical considerations related to the interviews.

Chapter Eight offers a demographic analysis of the study's participants and information regarding their basic ICT use.

Chapters Nine and **Ten** present the results from the analysis of the questionnaire, supported by qualitative data gathered from the semi-structured interviews related to internal and external factors, respectively.

Chapter Eleven addresses the study's research questions and discusses the key findings in relation to the literature review.

Chapter Twelve discusses the limitations and contributions of the study as well as the conclusion from the study. It also offers recommendations and identifies areas for further research. The chapter ends with reflections regarding the completion of the PhD journey.

CHAPTER TWO

CONTEXT

2.1 Introduction

This chapter provides general information about Saudi Arabia's higher education system. It aims to convey the landscape of the higher education sector in Saudi Arabia and specifically to explore issues around the use of ICT. The first section provides an overview of Saudi Arabia and progresses to higher education in the country and the Saudi religious and socio-cultural context. The purpose of these sections is to orientate readers who may be unfamiliar with the Saudi context and because demographic, geographic and cultural factors may influence both the tasks facing education policy makers and the pedagogical beliefs and experiences of lecturers. This is followed by a discussion of Saudi Arabia's use of ICT and policy towards ICT in higher education.

2.2 Overview of Saudi Arabia

Saudi Arabia, also called the Kingdom of Saudi Arabia (KSA), is in the southwestern part of mainland Asia between the Arabian Peninsula and the Red Sea. It covers approximately 2 million square kilometres (Central Department of Statistics and Information, 2013). Jordan, Iraq and Kuwait border Saudi Arabia to the north, the United Arab Emirates (UAE), Qatar and Bahrain are to the east, and Oman and Yemen are to the south (Figure 2.1). Thus, the KSA is at the heart of the Gulf states, with which it shares many economic and cultural features. The capital city of Saudi Arabia is Riyadh, which is in the centre of the KSA.



Figure 2.1: Saudi Arabia Map Saudi Arabia is between three continents: Asia, Europe and Africa (maps.google.com.au).

The population of Saudi Arabia is around 24.8 million (Ministry of Culture and Information, 2006) and growing rapidly. This growth requires the expansion of educational infrastructure and services, including ICT, which poses economic and practical challenges. Jeddah, the location for this study, is the largest city in the western region of Saudi Arabia. Jeddah also has special meaning for Muslims because it is near the two holy cities of Islam—Mecca and Medina—and is the gateway for visitors to these sites from all over the world. Thus, Jeddah is, in some ways, more open to external influence than most Saudi cities, which might be expected to be an advantage in terms of the adoption of new ideas, such as the use of ICT in education (Ministry of Culture and Information, 2006). Saudi Arabia is a fuel-exporting developing country. The country's Vision 2030 under Crown Prince Mohammed bin Salman aims to develop digital infrastructure to ensure 90% broadband coverage in cities and 66% coverage in towns by 2030 (Forbes, Saudi Arabia, 2015).

2.3 Higher Education in Saudi Arabia

Higher education in Saudi Arabia was established in 1957, with the inauguration of King Saud University in Riyadh. Saudi Arabian higher education encompasses all forms of education after secondary school (other than military-related programmes), including university and college, undergraduate and postgraduate study and professional programmes (Ministry of Higher Education, 2015). The Saudi government oversees all higher education institutions and strictly controls the curricula (Alqarni, 2015). According to government policy, the objective of education is to meet the needs of the Kingdom (Ministry of Higher Education, 2015). This objective helps explain why Saudi curricula are so intertwined with culture and tradition. A document titled *Education Policy in the Kingdom of Saudi Arabia* sets out the overall principles and goals of education and asserts that the government closely oversees all aspects of it (Ministry of Higher Education, 2015). In 2015, the Ministry of Higher Education and the Ministry of Education were combined into one ministry: the Ministry of Education (MOE). The principles and goals of the new ministry were as follows:

- 1) To construct Islamic, national and intellectual identities relating to knowledge, skills and values.
- 2) To prepare highly qualified citizens with the intellectual skills to perform their duty in society and serve their country.
- 3) To develop criteria for lecturers' qualifications and improve educational competencies.
- 4) To raise the quality of education.
- 5) To expand provision of educational facilities and buildings and their maintenance.
- 6) To develop scientific knowledge and research and provide them with investment and expand postgraduate programmes.
- 7) To expand private education to achieve the stated objectives.
- 8) To raise the quality of educational outcomes to ensure development and community requirements.
- 9) To develop a regulatory environment and promote active governance.

- 10) To provide overseas scholarships for higher-achieving students to meet national development requirements.
- 11) To invest in information and communications technology.
- 12) To diversify funding resources and investment.
- 13) To promote national and international partnerships (Ministry of Higher Education, 2015).

In a study conducted to evaluate progress towards the objectives of the policy outlined above, Al-Mengash (2006) revealed that not all the objectives were being applied. However, the Saudi government has made extensive efforts to improve education, both quantitatively and qualitatively. From 2014 to 2016, a large portion of the government budget was used to fund education-related costs. Statistics show that, in US dollars, the government spent \$53.9 billion in 2014, \$55.5 billion in 2015 and \$57.3 billion in 2016 (Ministry of Finance, 2014; Aldiab et al., 2017).

The yearly increase in funding is partly due to the establishment of the following three universities between 2014 and 2016: Jeddah University, Hafr Al-Batin University and Bisha University (Aldiab et al., 2017). Since Jeddah University, the focus of this study, has been a beneficiary of recent government spending programmes, it is expected that it might also be provided with up-to-date equipment and technology.

2.3.1 Jeddah University

The purpose of this section is to provide insight into Jeddah University. For many years, the only university in Jeddah was King Abdul-Aziz University. In 2014, the university was divided and Jeddah University was established as one of two divisions. The Saudi government paid \$7 million to build and monitor the university, which resulted in the provision of free education for all students. The university now has more than 350 staff members who hold Master's and PhD degrees from prestigious European and North American universities, as well as a total of more than 8,000 students (both female and male) of Saudi nationality (Jeddah University, 2014). The university also provides educational programmes to prepare graduates for the changing needs of society and to increase their job prospects (Jeddah University, 2014). The following are some of the challenges of the university's learning environment, as reported by the university (Jeddah University, 2014), which have implications for this study.

- There are only two academic disciplines at Jeddah University: one is natural science and the other is social science. Natural science includes health, physics, mathematics and engineering, while social science includes languages, Islamic studies, psychology, art, and history. These disciplines may differ in the nature of the information and skills involved, which might, in turn, influence the opportunities for ICT use.
- Male and female sections are separate. Female instructors teach female students, and no males are allowed on the premises. The saleswomen, cleaners, and security staff are also all female. The preservation of gender segregation in the study had implications for research access to potential participants and explains why no male lecturers were interviewed in this study (see section 6.3.1.2).
- Male security guards are stationed outside the female campus to prevent any men from entering. If any female does not belong to the university as a student or staff member, she must obtain permission and sign a form before gaining entrance. Again, these formalities increase the difficulty of conducting research in the setting.
- Many lecturers teach using technological devices provided by the university. The dominant current pedagogy is based on lectures and PowerPoint inside the classroom and a learning management system (e.g., Blackboard) outside the classroom; there are no seminars or tutorials (Jeddah University, 2014).

2.4 Saudi Socio-cultural Setting

The culture in Saudi Arabia is based on the two main elements of Islam and tribal affiliation, which makes the culture complex and unique (Albugami & Ahmed, 2016). Culture plays a vital role in technology acceptance in Saudi Arabia because it is a traditional country in which Islamic and Arabian cultural values play a significant role in people's behaviour. Therefore, it is important to understand the Saudi cultural because it might be issues to accept and adapt ICT in higher education (Alamri et al., 2014). Likewise, Al-Gahtani (2001) stated that Arabian culture has a stronger cultural effect on Saudi society than Western culture through the implementation of common beliefs and social norms in society. Similarly, Shanks et al. (2000) were of the opinion that "culture differences will mean that factors important in one culture may be less important in another culture and vice versa" (p. 538).

Recently, Saudi Arabia has been witnessing a technological revolution. For example, Amos (2011) reported that of the “ten million Saudis online, three million belong to Facebook, and Twitter feeds are up more than 400 percent” (para. 2). The country’s culture has changed because of this revolution and people’s norms have also altered, introducing new behavioural patterns. Thus, the development of technology is changing Saudi culture. Technology use is becoming more important, particularly in the education field (Alturise & Alojaiman, 2013). Nevertheless, Albugami and Ahmed (2016) argued that the domination of culture and religion appears to be behind resistance to the adoption of ICT in education. Therefore, an individual’s cultural perspective should be considered when lecturers are designing ICT to ensure that it is more attractive and retains more users. Ageel (2011) also found that Saudi Arabian culture appears to hinder the adoption of ICT in higher education. Saudi Arabia also has high cultural homogeneity, which is aligned to tribal and Islamic affiliations. In this sense, Saudi Arabia’s cultural beliefs and values make the country unique and complex, as Al Alhareth et al. (2015) noted when they argued that Saudi scholars have acknowledged this complexity in Saudi culture. The Saudi government faces great challenges if it is to achieve its goal of development, and fundamental changes in the way society is conducted are needed (Al Alhareth et al., 2015). In another study, Alfawaz et al. (2014:24) suggested “Saudi Arabia society has a unique appearance in its adherence to its inherited values”.

History has demonstrated that tribal affiliation and the Islamic religion are both critical to Saudi culture. However, there has been a visible change in the country over the last five decades, with Saudi Arabia moving from being an isolated undeveloped desert to a modern, developed nation. While Saudi Arabia now has modern and efficient technology, it also remains extremely conservative in terms of traditions. For example, the most influential factor in Saudi Arabian culture is gender segregation (Alkahtani et al., 2013). Under the influence of culture and Islamic traditions, education in Saudi Arabia is based on the segregation of genders (Albugami & Ahmed, 2016). Direct, face-to-face communication between genders, other than for close relatives, is not allowed in Saudi Arabia.

As a result of religious and cultural limitations, control of the Internet within Saudi Arabia is perhaps considered the most extensive in the world. It was not until relatively late, in 1999, that the Internet was introduced to Saudi Arabia and the government banned 200,000 websites to protect the values and culture espoused by Muslims (Albugami & Ahmed, 2016). In 2003, the number of banned websites

increased to 400,000. Saudi Arabia has had difficulty adopting ICT into its education system, including higher education, because its cultural traditions discourage change, thus making the use of new technology challenging to implement.

2.4.1 Religion

It is impossible to understand life in Saudi Arabia without recognising that the culture is related to the Islamic religion, which has ramifications for all aspects of life, including education and technology acceptance in the Kingdom. The pedagogical culture is being developed based on Islamic traditions and proposed new practices are judged in the light of the Islamic value system. In 1932, King Abdul-Aziz Al-Saud united various tribes and regions to establish Saudi Arabia. His descendants' rule to this day in this absolute monarchy. The constitution of Saudi Arabia is based on the Qur'an and Shari'ah law. Saudi Arabia has a unique standing in the Muslim world as the location of the two holy cities—Mecca and Medina—and their holy mosques. Prophet Mohammad was born in Mecca, which is the destination of the Hajj (pilgrimage). More than three million Muslim pilgrims from across the world participate in the Hajj (Hussain & El-Alami, 2005). Muslims believe that Allah is God and that He is the maker of the universe. Al Salloom (1989) states that education in Saudi Arabia has its roots in the Islamic religion because it started in the mosques before the establishment of schools and universities around their pillars. As Cameron and Cowan (1983) noted:

Saudi Arabia is the heartland of Islam, the guardian of the holy places; and nowhere is the influence of religion felt more directly or explicitly. Theoretically, religion and the state are one, and the Saudi constitution is the Quran (p. 755).

Islam views education as an obligation for all, male and female. There is no doubt that the Islamic faith fundamentally controls all aspects of life in Saudi Arabia, including the social and cultural spheres. Religious ethics outweigh everything else.

2.4.2 Pedagogical culture

Historically, education and, more specifically, higher education in Saudi Arabian universities, has relied on “traditional didactic, lecture-based classrooms” (Alebaikan & Troudi, 2010b:508). Elyas and Picard (2010) regard this as a legacy of the tradition of rote learning in early mosque education, as well as the cultural norm of subservience to a dominant authority figure, such as the sheikh, in early Islamic education. As part of this tradition, lecturers who are heavily dependent on textbooks (Smith & Abouammoh,

2013) present students with information and knowledge that the students are required to memorise and repeat. The current shift towards ICT in Saudi Arabia's higher education arises from the continued international criticism of its education system and concerns about changing the didactic nature of pedagogy and the curriculum within the country (Alebaikan & Troudi, 2010a; Smith & Abouammoh, 2013). Allamnahrah (2013:198) maintained that, "In Saudi Arabia, where didactic rote-learning is the prevalent teaching method, [this approach] must also be inadequate". Likewise, Idris (2016:1317) commented that "Most of the educational institutions in Saudi still use a behaviourist, teacher-centred approach in which the lecturer is the centre of the learning process and the students are passive, and just listen and write down what the lecturer or instructor says". Several studies conducted in Saudi Arabia have argued that only the behaviourist (teacher-centred) approach is used in the Kingdom (e.g., Fareh, 2010; Alrabai, 2016; Al-Maqtri, 2016). For example, Alrabai (2016) found that lecturers in Saudi classrooms only adopted a teacher-centred approach: they simply presented knowledge, rather than helping students to be active in the classroom. Alrabai (2016) indicated the propensity of Saudi students to depend mainly on the lecturer to transmit knowledge. Moreover, Fareh (2010), reports that Saudi teachers talk throughout most of the class time and give students little opportunity to raise questions or ideas.

Al-Maqtri (2016) investigated the extent to which classroom teaching in Saudi English departments involved a student-centred approach, by distributing a lecturers' questionnaire and conducting observations. He found that lecturers were unaware of the student-centred approach, as indicated by their giving contradictory answers with regard to the concept. The study revealed several limitations that lecturers face in applying a student-centred approach that is related to the lecturers and the system. For example, lecturer-related constraints included such observations as lack of awareness of the student-centred approach and an unwillingness to change roles. Most of the lecturers believed that a student-centred approach required more work on the part of the lecturers than traditional lecture-based classes. The teacher-centred approach was deeply rooted in the system, although lecturers were frequently asked to make use of a more student-centred approach. Lecturers made decisions about the choice of teaching methods and prepared the content, the schedule, attendance policies and the evaluation processes. Moreover, lecturers were given a largely prescribed syllabus and required to finish it in a limited time period, usually one semester. If a course was not completed in accordance with the syllabus schedule, the lecturers were required to provide reasons to the education authorities. Therefore, on the one hand, lecturers were asked to use a

student-centred approach and, on the other, they were restricted in terms of how they could do this and were expected to cover a whole syllabus but not given much time (Al-Maqtri, 2016).

In spite of criticism directed at higher education teaching, the didactic approach predominates, focusing on information transmission and memorisation; students usually work on an individual basis and competitively, so that they can earn high grades in Saudi public universities, using ICT tools in the classroom (Alqarni, 2015). However, Alsayegh (2007) argued that transmitting and memorising information is not enough to prepare students to be appropriately productive in the competitive business world of the 21st century's international society, or in terms of teaching them the skills required in their future workplace. In recent years, the Saudi Arabian socio-cultural context has changed due to various influences, such as globalisation, economic competition and, more crucially, technology (Alhadi, 2013). As a consequence, lecturers have introduced new ideas in education related to the fundamental skills required by students (Alsayegh, 2007). Increasingly, approaches to teaching show awareness of developments in teaching and learning theories. Many scholars have argued the potential benefits of changing teaching approaches in Saudi Arabia and applying more constructivist approaches instead of using traditional didactic, lecture-based methods (Alsayegh, 2007; Alhadi, 2013; Al-Maqtri, 2016; Arabai, 2016).

Many studies have investigated how culture shapes teaching strategies and learning approaches in Saudi Arabia (Asiri, 2012). Teaching style is always affected by cultural norms and the methods advocated by superiors. For example, the typical Middle Eastern classroom is characterised by the teacher-centred transmission of information, as well as studying and dictation (Tubaishat et al., 2006; Chadraba & O'Keefe, 2007). This contrasts with the variety of learning and assessment procedures common in Western nations, including the USA and the UK, where pedagogic and assessment systems in universities focus on different methods and ways of evaluating learning in the classroom, such as student research reports, presentations of cases and discussions (Chadraba & O'Keefe, 2007). Although such practices are not in themselves attributable to cultural norms, it is possible that the strong tendency towards individualism and the lower power distance (Hofstede, 1980) in Western countries may facilitate the adoption of this type of pedagogic practice. For example, in the USA, there is evidence that case reports, discussions, class presentations and term papers are favoured; they appear to provide students with better understanding of the course

concepts within changing contexts and different settings (Chadraba & O’Keefe, 2007). In contrast, in the Middle East, students are unfamiliar with independent working, group work, research and homework. It is often perceived by Western lecturers that Middle Eastern students avoid participating during class and that is why they fail to undertake independent learning opportunities (Tubaishat et al., 2006). These students mainly come from a public education system that focuses on teacher-centred, passive learning and involves lecturers explaining concepts and reading from textbooks (Chadraba & O’Keefe, 2007).

As a result of a deeply integrated tradition of a teacher-centred approach and student passivity, the Saudi government faces a challenge in finding solutions to the needs of the modern era, such as instilling critical thinking and problem-solving skills, as well as the demands for more creativity in a globalised world, without altering the existing culture. Nevertheless, as Al Alhareth et al. (2015) observed, many Saudis also recognise that if the Kingdom is to thrive in the rising global economy, it has to engage with the international community and improve productivity. Such concerns have led to a growing interest in ICT and the recognition that Saudi students need to develop a wider range of skills, including communication abilities for study and work.

Asiri (2012) noted that the previous ten years had brought an increased variety of teaching methods and technologies to Saudi Arabia in order to deliver the content of the curricula, although availability did not necessarily mean these approaches were widely used. Nevertheless, Saudi Arabia faces the challenge of balancing tradition and modernity and academic and social debates in Saudi Arabia have been aware of the issues posed by globalisation (Pavan & Alfahadi, 2014).

As discussed above those lecturers’ values, beliefs and cultures may affect the pedagogies they adopt. The study sheds light on these factors that influence higher education lecturers’ acceptance of ICT. Various studies have been carried out in the past two decades based on the UTAUT, and cultural factors given by Hofstede (1980) were used in this study to understand how they influence the UTAUT model. Inkeles and Levinson (1969) examined four main issues encountered by people all over the world that were also determined in the data obtained by Hofstede (1980). Hofstede considered the work of Inkeles and Levinson (1969) in terms of how these four dimensions signify the cultural distances of different countries. The following four dimensions were suggested by Hofstede et al. (2005):

- 1) Small Power Distance vs. Large Power Distance (PDI);
- 2) Weak Uncertainty Avoidance vs. Strong Uncertainty Avoidance (UAI);
- 3) Individualism vs. Collectivism (IDV);
- 4) Masculinity vs. Femininity.

Table 2.1: Hofstede's cultural dimensions Adapted from Al-Gahtani et al. (2007:638)

Hofstede's dimension	Definition
Uncertainty Avoidance	"The extent to which people feel threatened by uncertainty and ambiguity and try to avoid these situations" (Hofstede, 1991: 113).
Power Distance	"Focuses on the degree of equality, or inequality, between people in the country's society. A high-power distance indicates that inequalities of power and wealth are accepted practices and have been allowed to grow"
Masculinity	"Masculinity measures the degree to which 'masculine' values such as assertiveness, performance, success and competition prevail over 'feminine' values such as quality of life, maintaining warm personal relationships, service, caring, and solidarity"
Individualism	"Focuses on the degree to which the society reinforces individual or collective achievement and interpersonal relationships. A low IDV typifies societies of a more collectivist nature with close ties between individuals. These cultures reinforce collectives in which everyone takes responsibility for fellow members of their group"

Since cultural factors appear to be becoming more critical, there are important arguments about how culture may hinder the adoption of technology by lecturers. Culture is not an easy factor to define. However, Hofstede (2011:3) defines national culture as "the collective programming of the mind which distinguishes the members in one human group from another". Although Hofstede's national culture framework has been criticised because of methodological weaknesses (Baskerville, 2003), over 60% of culture studies still use one or more of Hofstede's cultural dimensions (Leidner & Kayworth, 2006). Hofstede's work still has a great impact today. According to Huang et al. (2018), Hofstede's work on cultural values is one of the most cited frameworks.

When incorporated with TAM with regard to the use of ICT and developed alongside educational research as a theoretical background, this confirms the effect of cultural factors on technology acceptance among lecturers in this study in terms of the use of ICT in their teaching. Moreover, cultures are recognised on the basis of their differing value systems (Hofstede, 1991). Attitudes, beliefs and views are all factors that are well known in the UTAUT model. Therefore, it is instructive to investigate the factors that may hinder lecturers from using ICT to support students' learning and communication in a non-Western cultural context (i.e., Saudi Arabia).

According to Hofstede's cultural dimensions, Saudi Arabian society exhibits large power distance, strong uncertainty avoidance, and collectivist and masculinity characteristics in its culture. According to Alamri et al. (2014:3), "Hofstede's investigation [was] administered to IBM employees in seventy-one different countries, out of which also some Arabic countries (Egypt, Iraq, Kuwait, Libya, UAE and Lebanon) and he generalized outcomes achieved to all Arab countries, including Saudi Arabia" (Figure 2.2 below shows Hofstede's characterization of Saudi culture). According to Hofstede, Saudi Arabia's

"Power Distance deals with the hierarchy in society and how some individuals or organizations possess more power than others. Saudi is ranked 95, meaning that people accept a hierarchical order in which everybody has a place and which needs no further justification. Individualism is the degree of interdependence a society maintains among its members. Saudi is considered a collectivist society. Loyalty in a collectivist culture is paramount and overrides most societal responsibility. Saudi Arabia for Masculinity: A high score on this dimension indicates that the society will be driven by competition, achievement, and success. Uncertainty Avoidance is a dimension, which has to do with the way society deals with not knowing the future, in which Saudi Arabia scored 80" (Turner et al., 2017:185).

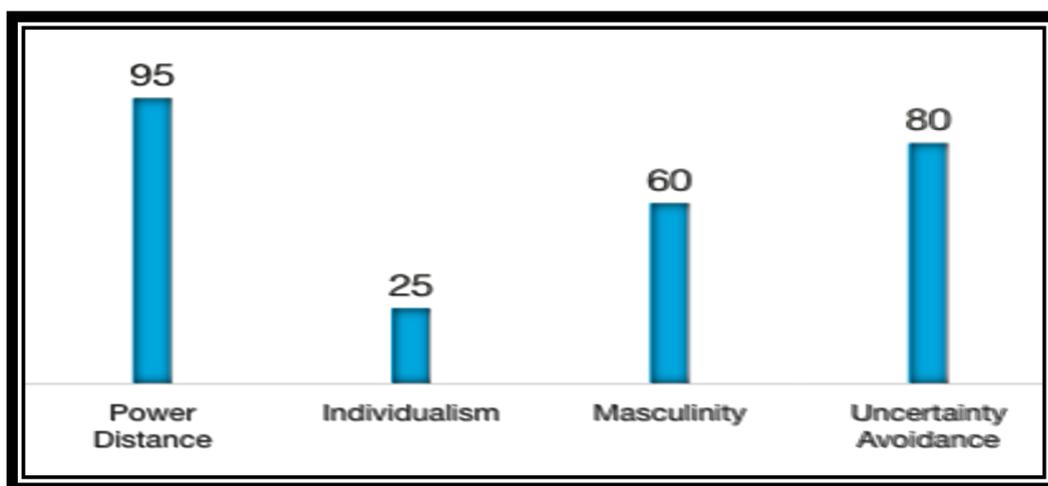


Figure 2.2: Saudi Arabia (based on Hofstede, 1991).

The Hofstede model above suggests how these characteristics are agreed with tradition towards the behaviourist teacher-centred and constructivist student-centred approaches (see Table 2.2).

Table 2.2: Features of Hofstede’s model related to both constructivist and behaviourist approaches

Constructivist (student-centred) approach	Behaviourist (teacher-centred) approach
Small Power Distance	Large Power Distance
Weak Uncertainty Avoidance	Strong Uncertainty Avoidance
Individualism	Collectivism
Femininity	Masculinity

It seems, therefore, that Saudi culture has features that led to teacher-centred methods and that move to a more student-centred approach may encounter difficulties because of the change in cultural values this implies. In relation to this study, culture might be one issue that lecturers face when using ICT to support student learning and communication.

The Saudi government has given universities ICT devices, such as overhead projectors and computers; however, there is not enough training or ICT tools available for such technologies to be utilised in teaching. Current Saudi training has its focus on basic technology skills, rather than pedagogical features. For example, Jeddah University provides lecturers with ICT training, such as how to open emails and use a projector, but there is no training in how to integrate ICT in the curriculum in order to support student learning and communication. Saudi lecturers use ICT to support traditional teaching methods and students are generally passive and simply receive any

piece of information from the lecturers during class. Certain universities in Saudi Arabia have, however, begun to adopt ICT into their teaching since the Ministry of Higher Education started to promote ICT use in learning and teaching amongst both students and lecturers (Alebaikan & Troudi, 2010b). Nevertheless, it has been observed that ICT integration raises the need for addressing cultural issues, such as support in a traditional learning environment that has separate classes for males and females and the requirements to make the delivery of instructions more focused on the students (Al-Sarrani, 2010). The following section discusses ICT in the context of Saudi higher education.

2.5 ICT in Saudi Higher Education

ICT refers to everything from the “electronic devices such as laptops and handheld computers, smart phones, and institution’s computers and associated devices to an integrated framework of computers, software applications, multimedia content, the Internet, web-based applications, learning management systems e.g. virtual learning environments (VLE) and other tools” (Alfahad, 2012:1268) required to support students’ learning and communication. Some of the most significant literature addressing frequency of lecturers’ application of ICT and the methods of employing technology in the classroom is reviewed in this section. In tasks such as administrative work, facilitating students’ learning, Internet access, lesson preparation and communication, lecturers are able to employ ICT. The word processing of lesson plans, the use of collective tools, such as online learning games, whiteboards, Blackboard, blogs and wikis, students’ grades and reporting, mobile devices, websites to research content knowledge and social networking site communication are a few examples of supportive applications of ICT (Majumdar, 2015). The new cultural and educational environments that are being developed and that are to be developed with the aid of ICT demand a significant role for the lecturer. Lecturers can use ICT for different purposes and they can create a positive environment for the teaching-learning process using ICT for flexibility and to enable students to enjoy an effective means of communication, collaboration, and the solutions to complex problems (Tedla, 2012). Many scholars have focused in the past two decades on the use of ICT in higher education for different purposes. For instance, in a study conducted by Punie et al. (2006), it was argued that ICT could enhance the quality of education and encourages an effective teaching-learning atmosphere for both students and lecturers. The integration of ICT can make

education more interactive and promote critical thinking and problem-solving skills. In an American study by Hertlein and Ancheta (2014), ICT was shown to be helpful in facilitating communication between lecturers and students so they could express their ideas on the topic of the lesson. It also helped to achieve a more effective correspondence between teaching styles and techniques.

Some Saudi researchers, such as Almadhour (2010) and Ageel (2011), have reported enthusiastically on the above developments, suggesting that universities are applying new technologies to achieve a more student-centred approach in education. Using ICT in the classroom has been claimed to have many benefits, such as lecturers' access to the Internet, the sharing of knowledge among lecturers in the same subjects, and enabling changes in teaching methods (Alfahad, 2012). Similarly, Alebaikan and Troudi (2010b) argued that ICT also promotes an open environment for interaction and collaboration on projects and assists students who are shy to join in a manner that is safer and more comfortable for them. According to Alfahad (2012), Saudi Arabia could benefit in several ways from using ICT in universities such as a clear connection between students and lecturers in the classroom. By making available with wide range of multimedia, software, applications and devices it adds to the excitement of the subjects and enables lessons to be more interactive (Majumdar, 2015). Moreover, using other types of technology, such as blogs, podcasting, wiki-based, video conferencing, and collaborative online learning, may also enhance the learning environment. In these environments, students are able to work on enhancing their social interaction and communication (Alfahad, 2012).

ICT has been developing in recent years and this element cannot be separated from education. The curriculum is constantly changing to meet the challenges of technological development. Most Saudi universities are well equipped with the newest technology available, along with multiple software packages such that students and faculty members can promote the use of educational technology (Akhter, 2016). However, educational technology still requires further development in Saudi Arabia because the large funding provided by the Saudi government was not sufficient in bringing educational technology to the desired standards, due to a number of factors (Alqarni, 2015). There are also many studies that identify the lack of access to ICT resources in universities in Saudi Arabia and suggest that the use of ICT would allow lecturers to support students to become more expert researchers (Bingimlas, 2009). Alturise and Alojaiman (2013) also reported that the lack of access to ICT prevents lecturers from using technology for university courses. This may suggest that

additional internal—cognitive, emotional or cultural—barriers, such as lecturers' resistance to change and their beliefs about teaching, might be at work (Ahmad, 2015).

2.6 ICT Policy in Higher Education

Higher education ICT policy considers all stakeholders involved in ICT in the education sector. However, some Saudi educators believe that a lack of clarity in educational policy and strategy is a problem, which may hinder the introduction of ICT in Saudi universities. For example, Al-Madani and Allaafijiy (2014) believe that a lack of clear vision, the absence of well-designed policies regulating education and little clarity in terms of planning and policies could lead to ignorance and misconceptions regarding ICT tools. Therefore, many Saudi Arabian educators want clear policy planning with regard to ICT implementation in universities. It could be argued that a clear framework and the clarification of unclear policy areas are crucial for ICT development in Saudi Arabian universities. For example, four ministers had responsibility for making decisions at the Ministry of Education over four years, which hindered several projects and exacerbated the lack of clarity and stability in the Ministry's future vision, thereby causing weaknesses in both ICT policy and strategies for translating it into action (Alamri, 2011).

The process of drafting a national ICT policy in Saudi Arabia is ongoing. Major concerns relate to the vision of how education systems might introduce ICT, such as the manner in which lecturers and students might be beneficiaries of ICT in higher education, establishing a set of goals and strategic policies that can provide a rationale, as well as the lack of direction and a proper policy framework on ICT. Lecturers should understand precisely how ICT could be used as a teaching/learning resource. Consistent with this idea, Ertmer (1999) is of the opinion that "A vision provides us with a place to start, a goal to reach for and a guidepost on the way" (p. 54). That vision must not be created by one person or by a top-down process beginning with the Ministry of Education. It should involve those who are responsible for the outcome, such as the community, students, parents and lecturers, as this would enable them to help in the creation of a vision by contributing positive attitudes, skills and knowledge. Afshari et al. (2009) suggested that a clear vision for the integration of ICT in a university that is shared by the university community members would enhance the appropriate use of ICT in teaching to support learning and communication. The present study is intended to provide insight into lecturers' beliefs, skills and attitudes regarding ICT integration and the challenges they face, which may help in the development of a

clear vision and policy for the future. This idea is supported by the new Saudi Arabia Vision 2030 initiative, which promotes a variety of learning methods in the higher education sector, including the flexible use of ICT in education and the removal of the barriers associated with it (Saudi Arabia's Vision 2030, 2016). The goals include exploring major issues and challenges surrounding higher education in Saudi Arabia and the policy calls on lecturers, students and other relevant stakeholders to be involved early in the development of the curriculum in order to devise appropriate and practical solutions that align with higher education aims and objectives. Specifically, the Vision document sets out the intention of:

“Developing teaching methods that focus on the Learner, not on the Lecturer, and concentrating on inculcating skills, personality development, improving confidence, and promoting the spirit of creativeness. Also, developing the Philosophy, Policy, and Goals of the Curricula, Means of Development, Mechanism Activation, and connecting all these means with the programmes for Lecturer Preparation and their professional development” (Saudi Arabia's Vision 2030, 2016: n.p.).

The drive to update and improve education, and particularly the political interest in new technologies, is reflected in the intention behind several methods and projects in the education field. For example, the Saudi government has made major efforts to encourage the use of ICT by investing heavily in supplying Saudi universities with ICT equipment, such as projectors and whiteboards.

2.7 Summary

This chapter first provided a brief description of the KSA, indicating its geographical position and the importance of cultural and religious life in the Saudi Arabian Islamic community. It shed light on the potential effects on higher education in Saudi Arabia of the Saudi socio-cultural setting, and an account of the pedagogical culture in relation to Hofstede's cultural dimensions. ICT policy in Saudi higher education was presented and it was explained that the lack of clarification of educational policies and strategies is an issue that may hinder the use of ICT in classrooms.

The following chapter presents the theoretical perspectives background of the thesis as a means of investigating major learning theories and how they support and inform the ways that ICT could be used in education.

CHAPTER THREE

THEORETICAL PERSPECTIVES

“A theory is a way of thinking and a model of how things work, how principles are related and what causes things to work together” (Austin et al., 2001:15)

3.1 Introduction

The first aim of this chapter is to present the framework that guides the analysis of the research project and investigating the pedagogical issues behind information and communications technology (ICT) adoption and integration. The focus of the first part of the chapter is the pedagogy issues contained in the study and it seeks to present two major learning theories: behaviourism and constructivism. The second aim of the chapter is to explore the emergence of ICT and how it is integrated into universities based on learning theories.

To accomplish the second aim, the following concepts must be understood: first, educational learning theories and ICT; second, behaviourists’ versus constructivists’ approaches to learning and the use of ICT; third, constructivist epistemology and teaching methods; fourth, lecturers’ and students’ redefined roles and the development from individual constructivism to social constructivism and ICT use; and, finally, issues that might be involved in adopting a student-centred approach in classroom practice. All these concepts are discussed in this chapter.

3.2 Pedagogical Issues

This section considers, based on learning theories, the different pedagogies within the use of ICT for learning that can be employed in the classroom or outside the university to support students’ learning and communication. Pedagogy has been defined as “the teaching strategies, techniques or approaches that lecturers use to deliver instruction or facilitate learning” (Wang, 2008:412). Pedagogy is an important factor that needs to be considered when lecturers want to integrate ICT in order to support students’ learning and communication. Some scholars have argued that the relation between ICT and education refers to “pedagogy before technology” (Watson, 2001:262), suggesting that the focus is on pedagogy first and then the issues around integrating ICT to support

students' learning and communication. This point was supported by Viadero (1997), who argued that,

“Placing computers and software in the classroom is not enough. Discovering whether technology “works” is not the point. The real issue is when and under what circumstance. Like any other tool, teachers have to come up with a strategy or pedagogy to make it work” (p. 16).

Watson (2001) suggests that ICT is

“Not only perceived as a catalyst for change, but also change in teaching styles, change in learning approaches and change in access to information. Yet research indicates that teachers are both threatened by change, and conversely not impressed by change that appears to focus on what the technology can do rather than on learning” (p. 251).

Likewise, Somekh (2008) maintained that lecturers should be aware of technology in order to adopt a new role in teaching. In the same vein, Okojie et al. (2006) pointed out that teachers should be able to “assess the appropriateness of any technology used for teaching and learning in relation to specific instruction. The lecturer should also consider how the technology selected fits into the objective of the lesson, methods of instruction, evaluation, feedback and follow-up initiatives” (pp. 67-68). To allow lecturers to integrate ICT into teaching, three factors in a technology-orientated learning environment should be explained: pedagogy, social interaction and technology (Wang, 2008).

In order to integrate ICT to support students' learning and communication, lecturers need to be trained in how to use certain technological tools. According to BECTA (2004), lecturers who are trained in preparation for new skills need to assess their pedagogical approaches to integrating ICT into their classroom. There are two contrasting pedagogical approaches, ‘behaviourist’ vs. ‘constructivist’, that have been used in teaching (Hassad, 2011). However, the aim of this study is not to show that the behaviourist approach is more effective than the constructivist or vice versa but that discussion might be advantageous in broadening the pedagogical culture in Saudi higher education. Learning theories provide us with conceptual frameworks that can be used to investigate how lecturers look at pedagogical issues that might face them in teaching practice.

In the 20th Century there were several attempts to explain effective learning processes by various researchers through proposals regarding numerous theories. The most common view within the field of education revolves around behaviourism and

constructivism. Several educational researchers have confirmed and supported this view by claiming that this largely denotes common trends regarding how the conceptualisation of learning occurs and offering unique guidelines for teaching practice. Two sections discuss the two learning theories as a background to ICT integration in teaching and learning environments. The first learning theory to be discussed is the behaviourist perspective, followed by constructivism.

3.3 Behaviourism

Behaviourism is one of the most commonly utilised learning theories in education literature. The roots of behaviourist theory go back to the 1920s and 1930s, when the school of psychology was founded by Ivan Pavlov (1934), B. F. Skinner (1938) and Edward Thorndike (1932). Many other psychologists, as well as Pavlov, Skinner and Thorndike, developed the theory over the years. Skinner and Watson, the two main proponents of behaviourism, sought to prove that learning is affected by environment and changes in behaviour can be controlled and predicted (Skinner, 1938). Skinner was the main proponent of the psychological theory of behaviourism and, following the work of Pavlov, Watson and Thorndike, set the precedents of behaviourist theory and its application to teaching and learning (Weegar & Pacis, 2012; Reimann, 2016). Behaviourism is organised in two main categories: classical conditioning and operant conditioning. For example, Pavlov's classical conditioning study demonstrated what happened whenever there was a conditioned stimulus. In his experiments, he rang a bell when his dog was going to be fed. Eventually, the sound of the bell alone would cause the dog to salivate. The main focus of classical conditioning is that the repetition of a certain behaviour leads to the behaviour having an automatic pattern. The theory was applied to animals first and then to humans. However, when no reward is presented with the stimulus for some time, the conditioned response will stop (Harasim, 2012).

Watson was influenced by Pavlov's classical conditioning experiment and suggested that people are born with a limited number of reflexes, as well as

“Proposing that psychology focus on being able to predict responses to various stimuli and completely disregard internal process of learning. Watson's main premise was that all human behaviour could be explained or understood through conditioned responses. Many of his studies were controversial and even considered unethical” (Reimann, 2016:38).

Skinner (1953) later formulated operant conditioning, which is built on Thorndike's theory of trial and error learning. Operant conditioning includes many complex factors of learning, that go beyond trial and error. It answers a need to explain behaviour as not merely reflective, but involving a higher cognitive process (McLeod, 2007; Reimann, 2016). Skinner believed that new knowledge could be gained by repeating stimuli, which, if reinforced, could enable the student to learn. He also viewed the mind as being like a 'black box' and ignored all the processes that occur in the mind. In other words, the importance of behaviourism lies in what the student *does*, not what the student *thinks*.

This school of thought is about giving instructions, referred 'direct' teaching, in how to learn and is commonly linked to specific pedagogical beliefs. This approach depends on presenting content. According to Skinner (1938), all students can learn effectively if their environment is controlled. He developed the principle of behavioural conditioning, stating that, "If the occurrence of an operant is followed by the presentation of a reinforcing stimulus, the strength is increased" (Skinner, 1938:21). Skinner relied on the idea of reinforcement, based on a systematic application of stimuli and responses that help in learning novel associations. Until the 1970s, behaviourism was the dominant rule of thought in the education (Jonassen, 1985; Boghossian, 2006). The fields of educational ICT and education still retain the influence that was left by behavioural learning theorists (Santrock, 2004; Peel, 2005). It has been suggested "Behaviourism was, and is, a moment primarily in American psychology that rejected consciousness as psychology's subject matter and replaced it with behaviour" (Leahey, 2000:686).

Behaviourism has shed light on many learning aspects (Jonassen 1985; Boghossian, 2006) and provided techniques for analysing students' behaviour (Jonassen, 1991). However, there was an argument that behaviourism cannot provide the whole picture of learning (Jonassen, 1985) and that behaviouristic techniques are simplistic and ignore students' mental processes (Ertmer & Newby, 1993; Santrock, 2004; Boghossian, 2006), treating students as passive beings who react simply to stimuli in the learning environment (Boghossian, 2006). The natural motivation for learning is focused solely on external rewards, which makes learning relatively passive (Santrock, 2004). This theory is deeply rooted in the Saudi education system, including higher education, where the main approach is that of a testing culture in which making sure that students pass examinations is prevalent.

3.3.1 Behaviourist teaching strategies

There are numerous examples published in the literature that describe and analyse the different types of teaching strategies that lecturers use in their teaching in behaviourist classrooms (Cuseo, 2007; Kaur, 2011; Almulla, 2015). Behaviourist learning theory assumes that all students have the same level of knowledge of the subject matter and that they are able to absorb the material at the same pace (Lord, 1999). The current researcher's review of related literature on teaching methods identified the following teaching strategy: the lecture method. The lecture method is very common in higher education and has been widely used by lecturers in a number of teaching contexts for a long time. However, the method did not appear with the arrival of behaviourism in the 1930s. According to Kaur (2011), the lecturing method has advantages and disadvantages, the advantages are that it can be used to deliver a number of facts in different disciplines and subjects; it can simplify the approach to topics and present a large volume of material in a short time; and it can provide the right perspective and orientation on a subject. Educators usually deliver materials by providing information, explaining it and then asking the students comprehension questions. Didactic sessions are lectures that rely on the lecturer giving information to the students through passive learning. The purpose of didactic sessions is to make sure the students gain knowledge (Paolini, 2015; Wolff et al., 2015). However, students lose interest in classes when lecturers use traditional educational strategies that involve direct instruction, as all they are doing is listening; they are not learning from it and, therefore, they lose concentration (Kaur, 2011). Almulla's (2015) findings indicate a strong connection between the lecture method and class size: in classes with a lot of students, lectures are used because they do not involve discussion; conversely, in smaller classes with fewer students, lecturers can use a wider range of methods. Likewise, Blatchford et al. (2009) state that large classes might have a negative impact on lecturers' workloads and reduce the opportunities for individual teaching. Cuseo (2007) was also in line with Blatchford et al.'s (2009) findings in stating that there is a strong relationship between method and class size. Lecturers in large classes may be more likely to use lecture methods rather than discussion, while in smaller classes the situation may differ.

There is a psychological impact on students when lecturers use the lecture method. For example, Huba and Freed (2000) claimed that the lecture method makes students more competitive, separates them and does not allow them to interact in the classroom. In addition, teacher-centred methods, such as lectures, are inadequate for

enhancing communication in today's world, in which soft skills such as communication skills are a part, to be recognised as important in learning in order to equip all students with important criteria for employment (Iksan et al., 2012). Soft skills include “the ability to plan and think strategically; the capability to communicate and interact with others, either in teams or through networking; good written and verbal communication skills; information and communication technology skills; creativity and self-confidence; good self-management and time-management skill” (Andrews & Higson, 2008:413).

Researchers have also noted weaknesses in the lecture method for teaching purposes (Cuseo, 2007; Kaur, 2011; Almulla, 2015). For example, lectures do not encourage analytical thinking, students often skip lectures, those who do attend do not participate much, students are not fully involved in the subject and students focus on learning lecture notes instead of learning from a more comprehensive textbook (Almulla, 2015). Conventional lectures are not useful on their own, and information that has been explained in books and articles is not the same as knowledge that is implemented (Schmidt et al., 2015). Learning does not simply involve facts and theories; it also requires a way to view and approach the world: a collection of beliefs, attitudes, a common ethic, and research practices that its contributors share (Schmidt et al., 2015).

3.3.2 Concerns associated with the behaviourist approach

The main issue with behaviourism is that it views human behaviour as reduced to the level of stimulus and an internal response (Peel, 2005). Nor does it consider the activity of the mind but focuses on the environment and how this affects learning (Naik, 2003; Faryadi, 2007). It also does not consider the individual's mental process. Faryadi (2007) captured this sentiment clearly when she observed, “Behaviourists rely only on observable behaviour in order to learn. They do not focus their attention on the mental activities of the learners, because to them learning happens when certain conditions are met. These conditions i.e. behaviours are universal in nature” (Faryadi, 2007:2). Similarly, Naik (2003) asserts that behaviourists ignore the individual's mental process and how a person constructs knowledge; they are not concerned to explain how people learn, or human behaviour. According to Naik (2003), the theory of behaviourism is invalid. In line with Naik's views, Abrams and Lockard (2004) explain that behaviourism does not sufficiently address the complexity of students' communication, problem solving, thinking and decision-making.

3.3.3 ICT use and behaviourism

In a behaviourist approach, lecturers may also use ICT and other technologies for computer-assisted instruction (CAI) or a drill-and-practice technique. For example, research has referred to “Computer assisted instruction (CAI), an integral part of information technology which has tremendously affected the teaching-process and introduced new methods of teaching” (Ewe et al., 2017:73). CAI is the earliest example of educational technology and is based on a drill-and-practice approach in which the designer controls the program, not the learner. The use of CAI was thought to have a positive effect on improving students’ skills and encouraging learning because it provided more directed feedback and enhanced learner enthusiasm (Ewe et al., 2017). The use of CAI in teaching activities involves computers and, therefore, it is important for lecturers to have the skills to use ICT in teaching. This is an essential part of CAI in order to understand the use of ICT, such as storing, creating, selecting, developing, changing, receiving and displaying many kinds of information (Adewoyin, 2009). Furthermore, “Skinner believed that machines were useful as lecturers because good instruction requires students to immediately know whether they were doing something correctly or not by receiving rewards or recognition for right answers” (Rabinowitz & Shaw 2005:50). This type of program focused on students’ reinforcement of learning and providing immediate feedback (Rabinowitz & Shaw, 2005). The program was also useful for lecturers because it provided immediate feedback and let students know straightaway if their answers were right or wrong (Cornelius-White & Harbaugh, 2010). In terms of how ICT can be used within behaviourist theory, numerous drills, practices, and instructional exercise program bundles have been produced to assist in traditional teaching (Gee & Umar, 2014).

Despite the advantages of using ICT, many lecturers who adhere to the teacher-centred approach are unwilling to integrate technology into their practice because they hold negative attitudes about ICT and fear that alterations and delays come with the incorporation of innovation into teaching (Howard & Mozejko, 2015). In contrast with the findings of Howard and Mozejko (2015), Liu et al. (2017) conducted a study with 202 Chinese lecturers to investigate whether constructivist pedagogical beliefs had a positive influence on their perceptions of ICT’s ease of use, usefulness and attitude in the Technology Acceptance Model (TAM) with regard to lecturers’ attitudes towards using ICT. Surprisingly, many of the participants who followed the teacher-centred approach did not have a negative attitude towards

technology. In view of this, the authors concluded that attention should be directed towards instructors with positive perceptions of ICT use but who continue using it conventionally, which discourage the student-centred approach to learning.

Another aspect of following traditional techniques is that lecturers with low-level technological knowledge and skills have a difficult time shifting from a teacher-centred to a student-centred approach. This view is supported by the findings of Rienties et al. (2013), who conducted a study with 73 academics from eight higher educational institutions. The academics were sent the technological, pedagogical and content knowledge (TPACK) framework, as discussed in Section 4.4.3, a skills survey and an online training program. The program was delivered entirely online to enhance the lecturers' ICT skills in teaching and learning processes and to reflect their academic beliefs and intentions regarding their use of ICT. The results revealed that training could enhance the lecturers' skills and support them in the use of ICT in the classroom.

Further factors constraining the use of technology by lecturers with a traditional approach are discipline and institutional cultures, time constraints and university policies (Orji, 2010; Al-Jumeily & Hussain, 2014; Tondeur et al., 2016). For example, Al-Jumeily and Hussain (2014) found that cultural beliefs might prevent lecturers from using ICT. This result is supported by Tondeur et al. (2016), who found that social and cultural factors, as well as other limitations, such as time and lack of skills, can prevent lecturers from using ICT.

In relation to the current study, behaviourism is a popular pedagogy in higher education in Saudi Arabia and is the case at Jeddah University. However, the pedagogy has been widely criticised by the majority of modern educational researchers on the basis that the behaviourist pedagogy does not support students' communication skills and is based on students' memorising material (Jonassen, 1995; Harasim, 2012). For example, Harasim (2012) found that behaviourist teaching activities did not improve students' higher-order thinking and communication, which are much needed in the 21st century skills. In spite of what has been examined above, behaviourist theory should not be ignored because it is useful and may be required for certain disciplines; indeed, traditional lectures have been known to achieve significant curriculum goals in having students pass all their examinations with high grades. This teaching theory is still a significant part of today's computer-assisted instruction. However, there are many reasons to apply a constructivist student-centred approach in lecturers' practices to support deeper learning and communication. Constructivism is discussed in the next section.

3.4 Constructivist Approach to Learning

Constructivist theory is grounded in the works of Piaget, Vygotsky and Bruner and in the philosophy of John Dewey. The constructivist approach, also known as a ‘bottom-up’ approach, maintains that students need to build knowledge and be interactive (Duffy & Cunningham, 2001; Amineh & Asl, 2015). A constructivist approach conflicts with the objectivist paradigm of behaviourism. The constructivist approach was developed from Piaget’s theories regarding cognition and how one comes to know things. Piaget’s research focused on the process of constructing knowledge and how the student develops knowledge through interactions (Piaget, 1972). In Piaget’s view, learning is not achieved by the passive reception of facts but requires the learner’s engagements in action, which helps change the individual by creating experiences and interactions with the physical world (Reusser et al., 2015; Miller-First & Ballard, 2017).

Piaget argued that the individual constructs understanding through a process of active involvement in experiences with the environment. Piaget (1972) was of the following view: “I think human knowledge is essentially active. To know is to assimilate reality into a system of transformations. To know is to transform reality in order to understand how a certain state is brought about. By virtue of this point of view, I find myself opposed to the view of knowledge as a copy, a passive copy, of reality” (p.12). Vygotsky, a Russian psychologist, suggested that learning occurs through collaborative and social interactions at the centre of education: the Zone of Proximal Development (ZPD); this is created through interactions between more and less experienced learners (Eun, 2019). Although collaborative activity is not essential in the constructivist view of learning through reflective thought, it is essential in the social constructivist view on the basis that the individual cannot exist separately from society as a whole and learning takes place in both the social and personal worlds (Dewey, 1938). Similarly, Ültanır (2012) asserted that constructivist theory, which is based on an understanding of experiences and background knowledge, is an epistemological, not ontological, perspective. That is, it is a theory of learning or meaning making that explains the nature of knowledge and how human beings learn.

The student-centred approach is often associated with adult learning or andragogy (Knowles, 1998). The shift from conventional pedagogy towards a constructivist adult learning approach in Saudi higher education could be achieved through the integration of constructivist approaches. To identify ideas that have

connections with a topic, it is imperative for students to have step-by-step involvement in the approach. According to Knowles (1998), there are six principles that apply to adult students:

1. Relevance, because adults should understand the importance of learning something.
2. Besides external motivators, internal motivators, including self-actualisation, greater self-confidence, better life quality, recognition, and self-esteem, drive adults.
3. Adults interact with problem-centred and life-centred learning activities, thus implying that learning is intended to enable them to have a satisfactory life, solve problems, or perform tasks.
4. Adult students are prepared to learn because they have understood the necessity of knowing or doing something for effective performance in their personal lives or jobs.
5. The role that experience plays over time transforms the adult student into a rich information source.
6. Adults achieve other life aspects, as they have the ability and willingness to participate in and direct how in learning should be implemented and planned (Knowles, 1998).

The principles outlined for adult students by the social constructivism approach, as discussed in Section 3.4.2.1, suggest solutions to problems that might be experienced through learning. Today, constructivism has “become a significant element of the educational policy and practice scene. Constructivist approaches are reflected in national and state-level policy documents, such as the national standards documents, that are designed to influence the curriculum and pedagogy in American classrooms” (Richardson & Placier, 2001:913).

In addition, students can ask questions and communicate with the lecturer with regard to methods that would enable them to think for themselves. One of the benefits of a student-centred approach for Saudi higher education policy is that students would be able to share information with their classmates. For example, the lecturer could ask students to form small groups to increase interaction in the classroom, as this technique would help students learn how to deal with real-life problems.

3.4.1 Constructivism as an epistemology

“Epistemology is an area of philosophy that examines questions about how we know what we know. As philosophers attempted to answer questions, they developed answers that are clustered in different schools of thought” (Weegar & Pacis, 2012:8). In constructivism, a lecturer sets learning objectives and then monitors whether the students achieve the objective of the subject. In constructivist environments, students work in groups and with peers in the classroom and might check their own and each other’s learning (Davis, 1993). Furthermore, collaborative learning theory suggests that students working in groups and teams achieve success, as they learn crucially from each other (Davis, 1993). This also enhances social and communication skills, understanding and critical thinking through the practice of debating in the classroom. These skills help students to understand the material taught and achieve worthwhile outcomes (Davidson, 2012; Weegar & Pacis, 2012).

According to Howe and Berv (2000), a constructivist environment includes two ideas of interaction: first, interaction requires a starting point for the student’s knowledge and attitude; and second, interactions are designed to provide experiences for students to construct their own understandings. Therefore, lecturers should focus on activities and methods that develop learning environments (Duffy & Cunningham, 2001; Straits & Wilke, 2007) and that are not based on transferring information to the students; rather, they would give the students an opportunity to be active and more involved in their learning environments (Duffy & Cunningham, 2001; Krahenbuhl, 2016). The emphasis must be on the activities of students rather than teaching instruction (Reusser et al., 2015). In view of this, active instructors ensure that all students are critical and can communicate effectively (Karagiorgi & Symeou, 2005); nevertheless, it is worth noting that a student-centred approach does not relieve lecturers of the responsibility of teaching within the classroom (Reusser et al., 2015).

The process of assessment in a constructivist framework is also different from conventional methods of assessing progress (Darandari & Murphy, 2013). From a traditional perspective, assessment is a process that follows the learning of students and is different from learning (Darandari & Murphy, 2013). There are two types of assessment, summative and formative, and these have different forms and functions (Qu & Zhang, 2013). Summative assessment, which typically involves pencil and paper examinations, is undertaken to evaluate students’ recall of information associated with a specific body of knowledge that has already been learned (Brooks & Brooks, 2001).

The pencil and paper type of examination is one of the most effective methods of evaluating learning and teaching functions (Qu & Zhang, 2013). However, although students are informed, this does not necessarily imply that they have learned something (Darandari & Murphy, 2013; Qu & Zhang, 2013). Moreover, summative assessment compels learners to rely on instructors, thus leading them to give answers that are consistent with the wishes of their lecturers (Brooks & Brooks, 2001). In Jeddah University, this is also a common method of assessing students; however, it is hard to use summative assessment to test students' abilities, such as communication skills. In comparison, formative assessment focuses on students' individual performance, progress and achievements, as well as supporting students' critical thinking (Qu & Zhang, 2013). Formative assessment can be scheduled at various stages through the learning process; it can accompany mastery learning; and it can include peer assessment (Williams, 2014). It is used at the beginning of the teaching course to assist the students during the process of teaching as teachers check for student understanding (Alotabi, 2014). In the same vein, in Williams (2014), formative assessment is used to identify the students' experience. Sadler (2009) suggests formative assessment enables students to learn through the process of feedback and opportunities to improve their practice. However, it is useful to combine both forms of assessment to support student learning and communication. In this respect, Qu and Zhang (2013) were of the following opinion:

“Yet, if we use one type of assessment method for a long period, it's possible to cause negative effects. Therefore, formative evaluation and summative evaluation cannot be completely separated. In a certain range, effective evaluation can make teachers use different ways of evaluation so they will have a comprehensive understanding of students' ability. Therefore, we should put summative assessment and formative assessment to combine together in order to guide teaching and get more comprehensive and reasonable assessment of student learning” (pp. 338-339).

This view is supported by Williams (2017), who suggested combining both forms of assessment making students take a more responsible role for their learning in higher education. As well, assessment should be shifted from quantifying individual students' grades on academic tests, to support for students' collaboration and communication (soft skills). This would help the students to improve their real-life skills. The approach requires lecturers to think about the dynamic relationship between assessment and teaching, whilst simultaneously continuing with the learning process (Brooks & Brooks, 2001). By evaluating students' knowledge or skills, such

assessment provides students with the ability to face and address real-life problems and is called alternative or situated assessment (Brooks & Brooks, 2001). However, constructivism often remains misunderstood by many lecturers, who frequently confuse it with other approaches. For example, the discovery approach is often mistaken for a form of constructivist teaching, which leads to “learning practices that neither challenge students nor address their needs” (Gordon, 2009:737).

3.4.2 Lecturers’ and students’ roles in a student-centred approach

The role of the lecturer in a student-centred approach is to assist students to share information and communicate, facilitate collaboration and enable students to exchange their ideas, and help students develop and assess their understanding (Amineh & Asl, 2015; Bada & Olusegun, 2015). In the student-centred approach, the students are active and involved in the learning process (Bada & Olusegun, 2015). The role of the learners in constructivist theory is to construct individual interpretations of their experiences (Amineh & Asl, 2015). Learners construct new understandings using what they already know (Bada & Olusegun, 2015). As such, “Learners control their learning. This basic tenet lies at the heart of the constructivist approach to education” (Brooks & Brooks, 1999:21). In contrast to the teacher-centred approach, where students have to memorise what they learn, they focus on the learning process itself; the role of the lecturer is to polish the learned information.

Brooks and Brooks (2001) state that a lecturer adopting a student-centred approach is one who encourages and accepts autonomy and initiative from learners. Lecturers should also provide opportunities for discussion and the sharing of students’ understanding and knowledge of concepts before offering additional or supplemental input. Explaining this point further, Brooks and Brooks (2001) emphasise that lecturers should encourage and seek initial responses from their students because if students are provided with opportunities to make meaning of their learning experiences, they can construct knowledge and create appropriate links in their learning.

Many scholars have argued that students learn faster and better when they work actively in problem solving rather than through rote memorisation, and retention rates have also been shown to improve in this situation (Woo & Reeves, 2007; Bada & Olusegun, 2015). In the light of the above-mentioned benefits of using social constructivism, Alsulami (2016) suggests that, if applied in the Saudi context, the approach could include the country’s unique lifestyle and culture, which may be easily conveyed to students when lecturers emphasise this in the classroom. This method

would also alter how students think and increase their learning motivation when lecturers gradually apply a student-centred approach.

3.4.2.1 Vygotsky's social constructivism

Social constructivist learning theories are similar and share several fundamental principles, as well as an interpretive epistemological position. Social constructivism is the construction of knowledge with the help of social interaction and other active processes (Vygotsky, 1987; Hernandez-Serrano et al., 2000). Vygotsky was the founder of social constructivist theory and he believed that cognitive growth first occurs at the social level and then at the individual level. In other words, development and learning can occur during active learning, collaborative work and interaction and include expert knowledge to accomplish tasks by “explaining reality, transmitting cultural messages and mediating the learning of environmental rules” (Kouzulin & Presseisen, 1995:69). Therefore, the majority of social constructivist theorists believe that social interaction and language have a direct influence on human learning and development. Hence, as Mechlova and Malcik (2012) point out, lecturers are involved in teaching in contexts that might be meaningful to students based on interactions that could happen in various ways, which include discussions, class debates and group collaborations, along with meaningful activities involving correct answers (Eun, 2019). Thus, while lecturers play a crucial role in terms of developing contrasts to stimulate thoughts and discussion, students receive judgements on their own merits. For example, the cooperation and dialogue between peers can be very valuable for knowledgeable support (Krahenbuhl, 2016). The support that knowledgeable people provide enables learners to operate within the area called the Zone of Proximal Development (ZPD). As a teaching technique, scaffolding is closely linked to Vygotsky's idea of the ZPD (Eun, 2019). According to Eun (2019:20), this approach works through “Scaffolding instructional approaches that provide support from a more experienced and knowledgeable person until the less competent person can internalize the skills and knowledge from the assisted performance and begin to perform individually”.

Social constructivism stresses the significance of culture and context, as knowledge is constructed in light of a learner's understanding of all that happens in society (McMahon, 1997). Similarly, Scott and Palincsar (2013) pinpointed the field of sociology by regarding the socio-cultural point of view as an important theory that helps in understanding the factors that might influence the patterns of an individual's attitude towards environmental, institutional, historical and cultural elements. Likewise,

Leask and Younie (2001) and Wang et al. (2011) posit that interaction facilitates the understanding and construction of knowledge by students. As a communal-constructivist paradigm, socio-cultural theory perceives human knowledge as the product of social interaction in a community via collaboration. In social constructivist theory, learning is considered a dual agent, wherein lecturers and learners interact in the co-construction of social-cultural settings and complement each other in decision-making (Durodolu, 2016).

From the social constructivist and active learning viewpoint, such interactions provide a more effective learning environment than the ‘traditional’ student-centred approach. Several researchers have maintained that using a traditional teacher-centred approach is not effective in the digital era; for the best learning to occur, students must interact socially (Mechlova & Malcik, 2012; Bada & Olusegun, 2015; Krahenbuhl, 2016). Learning should take place through social interactions and the use of communication, enabling students to talk and discuss in class by increasing the social environment of the classroom, which can include the teaching methods employed (e.g., direct small-group discussions or communicating with students) and encouraging students to be active, not simply passively attending a lesson in a class. It has also been suggested that lecturers’ use of a student-centred approach (social constructivism) can increase learning because it meets students’ emotional (Bada & Olusegun, 2015) and psychological (Amineh & Asl, 2015) needs. In addition, many scholars have argued that a student-centred approach offers the creation of effective learning environments (Mechlova & Malcik, 2012; Krahenbuhl, 2016). For example, Krahenbuhl (2016:100) suggested that lecturers should move from didactic learning (‘the sage on the stage’) and ‘passive learning environments’ to a student-centred approach. However, although the lecturers in Krahenbuhl’s study held positive views about the student-centred approach, the climate and environment of educational circles further embed these ideas into lecturer preparation, evaluation systems and the general educational discourse, which will undoubtedly have an increasingly profound impact.

Another aspect of social constructivism and the student-centred approach is that it is supported by several studies that suggest that learners acquire new knowledge through interactions and active learning as part of a learning process in which lecturers and students gain information and students engage in an active construction process, by active, not passive, tasks based on their experience (Bada & Olusegun, 2015; Mattar, 2018). This view can also be supported by Alsulami (2016), who asserted that a student-centred approach enhances the critical thinking and communication of students,

helping them in making sense of new information. Therefore, this approach involves building positive classroom relationships and taking the interests of the learners into consideration, not simply having them engage in imitations and repetitions.

3.4.2.2 Student-centred approach

A student-centred approach is based on a variety teaching strategies, and wide range of ICT technology uses such as group and paired activities, which develop new knowledge.

Group activities

The use of group activities as a type of learning, has been given various names, including cooperative learning, collaborative learning and team learning. Study groups are based on cooperative learning and are a constructivist approach that consists of group work, which is also linked to the social constructivist approach (Kalina & Powell, 2009). Two factors are significant in the construction of knowledge: social interaction and collaboration. These two factors were identified by Vygotsky (1980). The constructivist method is commonly used with the aim that students should work together (Schunk, 2012). Schunk (2012) suggested that, while it is better if the members of a group work well together and develop and practise cooperative skills, it is the responsibility of the lecturer to make sure that every group has a reasonable chance of achieving success in the activities.

According to Paolini (2015:27), there are two types of group learning paradigm: small groups and large groups. “A small group can take part in experiential tasks, allowing the group members to brainstorm, learn from one another, and apply knowledge collaboratively. The more instructors motivate and encourage their students to succeed, the more likely students will be to feel connected to the material, believe in themselves and increase their learning outcomes”. In comparison, large group discussion learning assists students in better understanding the content of a module and enhances students’ communication and collaboration activities (Sofroniou & Poutos, 2016). Kanev et al. (2009) held the view that group learning plays a key role in collaborative and cooperative learning methods, in addition to attracting important research interest and supporting student communication. The purpose behind using large group discussions is to encourage students’ team-working skills and communication (Requena-Carrión et al., 2010; Filatova, 2015). For example, Filatova (2015) highlights how using a student-centred approach can be a powerful tool in

education by employing different activities in the classroom, such as group discussions and debates, to encourage students to develop their communication skills.

There are many different ways in which lecturers' use of ICT in group activities (student-centred) can greatly enhance active communication. ICT helps lecturers and students to communicate without boundaries and allows the lecturer to bring the whole world into classroom activities and enable students to be independent learners (Majumdar, 2015). Much earlier in her career, the researcher believed that ICT could support students to communicate without boundaries. Now, the researcher is of the view that ICT is not a catalyst with magical properties but a resource with effects that depend very much upon the lecturer's pedagogical standpoint, as discussed in Chapter Twelve, Section 12.7. Hence, some lecturers use ICT (very effectively) to reinforce their teacher-centred approach: the use of PowerPoint as a lecturing tool is an example. There are many different ICT tools that lecturers can use in the classroom to enhance students' learning and communication. For example, flipped learning, which is an advanced educational method that was launched in 2006, entails facilitating student-centred learning and the role of lecturers in transitional and institutional change (Hutchings & Quinney, 2015; Sultan, 2018). To clarify, a "flipped classroom generally provides pre-recorded lectures (video or audio) followed by in-class activities" (Wolff & Chan, 2016:9).

According to Educause (2012), flipped classrooms typify contemporary instruction techniques, wherein learners watch short videos at home in advance before a class session; the in-class session is then devoted to exercises, projects or discussions. Educause suggests that using flipped learning in class can be student-led and communication among students can become the active element in the classroom. Similarly, a recent study conducted by Setren et al. (2019) examined the use of flipped learning among mathematics and economics students. They found that the mathematics students gained in achievement, while no effect was evidenced for the economics students. The results fade out of students being taught by flipped classroom after the students had taken their final examinations. However, Filatova (2015) asserted that flipped learning could help develop communication in the classroom. However, she found that using a student-centred approach, such as flipped learning, might face challenges, as it can be time consuming for the lecturer to prepare a lesson. According to Filatova (2015), the benefit of flipped learning is that it improves

"Face-to-face interactions and therefore development of interpersonal communication skills, and finally, self-assessment and self-correction

on the part of students. Some of the challenges of student-centered teaching are additional preparation and restructuring of teaching time on a teacher's part and resentment of the approach on a student's part due to individual or cultural attributes" (p. 20).

Other examples of ICT that lecturers might use are Blackboard, blogs and wikis. These technologies all offer a new way to communicate online and are used in higher education as they enable learners to create videos, messages and voice recordings, all of which enhance students' communication skills (Tunks, 2012). However, the use of social networking, such as Twitter and blogs, between students and lecturers in higher education with a focus on a particular course in the classroom is still rare (Menkhoff et al., 2015), despite its increasing popularity as a source of communication amongst the new generation of students.

Chawinga (2017) tested the impact of social media popularity in Malawi by conducting research with 64 students. The test was done to determine the attitude of students towards the use of Twitter and blogs in a university set-up. The study concentrated on how Twitter improved communication among fellow students whilst facilitating knowledge portals. He found that Twitter and blogs are catalysts for the student-centred approach to teaching because, using these technologies, that students shared and discussed course materials. However, in Saudi classes, in looking to a new teaching method, the focus of learning is on the students (student-centred) (Tawalbeh & AlAsmari, 2015). It is anticipated that students' behaviour in group learning would be enhanced in terms of interaction, social skills and group communication. A study conducted by Kassem (2019) recommended that the classroom environment must be changed, such that learning is facilitated, but that this approach should be introduced gradually.

Paired activities

Pair work is a learning activity that involves students working together in groups of two. Pair work is defined in the Longman Dictionary of Language Teaching as the grouping of students in small groups of two to three in order for them to undertake a learning activity together (Richards & Schmidt, 2013). In paired activities, the lecturer focuses on the strategies, rather than information, involved in having students work together, in order to enrich and enhance meaningful learning and interactions between them. The outcome should be enhanced communication. The main advantage of using paired activities in the classroom is that "it increases learners' opportunities to use the

language. Pair work provides an effective method to use language as it is used in normal life” (Zohairy, 2014:51). Another advantage of pair work is that it motivates students to broaden their perspectives, such as learning about different cultures, and the whole class can speak (Bertrand, 2010). Paired activities can, however, present a problem, as students might talk about something other than the subject they are supposed to be studying (Zohairy, 2014). This was highlighted by Abdulla (2007), who asserted that pair activity sometimes create disturbances between students because peers might talk about irrelevant topics.

There are many different ways in which a lecturer’s use of ICT with paired activities (student-centred) can greatly enhance active learning. According to Mattar 2018:202), “The Web 2.0 movement and new tools, such as blogs and wikis, podcasting, social bookmarking and social networking, have contributed to replacing passive teaching methodologies with more active approaches, including student-centred learning, the co-creation of knowledge, and peer review assessment strategies”.

Siemens (2008), for example, in proposing connectivist theory, claimed that developments in technology and social networking had significantly changed the ways students can access knowledge and information and interact with their instructors and peers. In Saudi Arabia, however, using pair work is not common and lecturers in the country have different views and various strategies with regard to this type of activity. For example, “In the preparatory year in Saudi Arabia, teachers have different views and various strategies in regards to pair work. During a discussion about pair work, some lecturers claimed that pair work is not suitable for Saudi classes, as it raises the chances of students misbehaviours”(Zohairy, 2014:52). A study conducted in the United Arab Emirates (UAE) by Abdulla (2007) asserted that using pair work was not a common teaching method there either. However, Abdulla’s (2007) study confirms that using pair works in an English as a foreign language (EFL) classroom might enhance communication between students and in the real world.

In recent years, several alternative teaching methods have been developed for face-to-face and online learning in the international educational field. Project-based learning is used as a student-centred approach for the benefits that it delivers, such as increased student engagement and the integration of several learning styles. Project-based learning builds students’ problem-solving abilities and skills and encourages them to be creative, as well as ensuring that they are active in the learning process (Rogers, 2002). The approach allows students to learn and engage in understanding basic concepts in the practical world and seeing how these concepts work together.

Blended learning is another method of teaching (Bergmann & Sams, 2012), as is peer instruction (Crouch & Mazur, 2001), the case method (Kasloff, 2011) and the flipped classroom, referred to earlier in this section (Bergmann & Sams, 2012). A number of teaching methods employed in higher education were tested in Pakistan by Sajjad (2010), using a survey to see which students found the best. He found that lecture and taking-notes were the best methods that students preferred, because they save time and cover all the content of the subject. The second method that students preferred was group discussions because it makes students become active in the classroom. Rather than relying on one method such as rote learning, group discussions develop creativity and communication between students. Similarly, Chickering and Gamson (1987) examined a variety of methods used in the classroom, such as reading, discussing, associating information with a previous context, writing and taking part in activities that help undergraduate students in problem solving and communicating. They found that strategies that were collaborative and social, rather than competitive and isolated, made students share ideas, sharpened their thinking, and deepened their understanding.

3.4.2.3 ICT use and constructivism

ICT integration in education equips lecturers with the necessary pedagogical abilities to use technologies productively in the transference of knowledge. Technologies can help students (Kivunja, 2014; Karaca, 2015) and can be applied in the development of new knowledge that is based on what learners already know (Koehler & Mishra, 2009).

The constructivist approach encourages the use of technology as a teaching aid (Kaya, 2015). Constructivism and ICT are held up as a powerful combination that can lead to meaningful learning and the furthering of educational goals (Li et al., 2019). In order to support learning practice, ICT can be applied in various ways in the light of different learning theories. In the majority of today's classrooms, and in many educational institutes, traditional learning theories are being practised by employing ICT in place of traditional media. On the basis of results obtained from research, it has been advocated that lecturers not rely on the tools of technology or on learning theories alone (Li et al., 2019). Consistent with these assertions, the proponents of constructivism posit that rather than using ICT solely for displaying information in universities, students should have the opportunity to use it to facilitate their learning and construction of knowledge. New perceptions regarding learning cannot be created simply by applying telecommunications technologies, such as email and the Internet (Li et al., 2019). Through such tools, however, learners might gain the opportunity to

communicate and engage inside and outside the classroom, as well as with the real world. The aforementioned telecommunications technology tools could be used to complement the constructivist method by allowing learners to nurture rich learning settings through collaboration and discussion (Kivunja, 2014; Martínez Rivera & Duță, 2015). The meanings of different issues could also be better understood when discussion is used as a learning approach by students (Jonassen, 2006). Likewise, through engagement in authentic tasks, learners gain an opportunity to develop their skills (Duffy & Cunningham, 2001). It was observed by Ahmad et al. (2015) that many factors affected the use of technology by lecturers in class, including teaching style; the perception behind the constructivist approach and how informed the lecturer is about ICT tools.

3.5 Comparison of teacher-centred and student-centred teaching

According to Schreurs and Dumbraveanu (2014), the two approaches (teacher-centred and student-centred) that have conventionally been applied in teaching are characterised by conflict. The teacher-centred approach is more likely to promote learning of a behaviourist nature and a student-centred approach is more likely to engender learning of a constructivist kind (Liu et al., 2017). The increasing emergence of new technologies for enhancing teaching and learning has driven the need to shift from a didactic (teacher-centred) approach to methods that emphasise students as primary stakeholders. Teacher-centred approaches revolve around information transmission or direct instruction (Ertmer et al., 2012), in which learners are passive receivers of knowledge (Huba & Freed, 2000; Brooks & Brooks, 2001).

In spite of their frequent use, however, teacher-centred approach has received numerous criticisms, the foremost being their tendency to relegate students to a passive role in the class setting. As lecturers are the principal agents in the education process, they are required to cover a wider range of topics, which is why instruction draws from a large number of notes and few practical activities are provided (Agyei & Voogt, 2013). A study in the Iranian context that conducted experimental observations and lecturer interviews found that a teacher-centred approach failed to enhance the students' communication. However, in a student-centered approach, students may work alone, in pairs, or in groups (Zohrabi et al., 2012). In the same vein, Emaliana (2017), in a study conducted in Indonesia, investigated English department students learning needs including their attitudes towards student-centered and teacher-centred teaching approaches, in English as a Foreign Language. She concluded that lecturers

should involve students input to syllabus and material planning, to lesson planning and classroom instruction practice and shift towards a student-centered approach to support students' interaction and communication in the classroom.

The review conducted in relation to the current study found studies to confirm the suggestion that applying a teacher-centred approach might not support student communication. In addition, this approach does not attach importance to communication in the classroom (Tawalbeh & AlAsmari, 2015). Lecturers with low technological knowledge and skills have a difficult time shifting from a teacher-centred to a student-centred approach (Rienties et al., 2013). Accordingly, a teacher-centred approach remains the dominant orientation in many developing countries, such as Saudi Arabia (AlAsmari, 2015), Malaysia (Ghavifekr et al., 2016) and Bangladesh (Khan et al., 2012). In Saudi Arabia, this heavy reliance on teacher-centred approaches is reflected in the curricula, with a direct focus on the repetition and memorisation of information (Majumdar, 2015).

In contrast, in a student-centred approach, the lecturer serves as a coach, observer and helper, rather than a singular source and transmitter of knowledge (Cornelius-White & Harbaugh, 2010). Switching to this orientation requires lecturers to possess a varied set of knowledge and skills about the technology, content and pedagogy necessary to enhance teaching, as discussed in Section 4.4.3 on TPACK. Competence related to technology is particularly important, as a student-centred approach involves the use of a variety of ICT tools to support active and collaborative learning (Dexter et al., 1999; Jonassen et al., 1999). The goal is not only for students to acquire information, but also for them to exhibit a willingness to share knowledge and the capability to broaden their abilities in practical situations—abilities that prepare them for their future careers. In a class taught with students as the principal stakeholders, the lecturer assumes the role of a facilitator who uses class time to promote communication and cooperation, learner reflection and active student engagement.

Within international spheres, there is an urgent call for a paradigm shift in higher education, especially in relation to adopting student-centred approaches (Pham Thi Hong, 2011; McCabe & O'Connor, 2014; Yusoff et al., 2013; Sweetman, 2017). Zeki and Güneşli (2014) assert that a student-centred approach helped improve student lecturers' cognitive, decision-making, communication, problem solving, self- and peer-assessment, and higher-order thinking skills in their study. All these skills can be better obtained through adopting a student-centred approach in higher education. This

shift is witnessed in the current move in universities from passive to active participation in learning (Barr & Tagg, 1995). A comparison of teacher- and student-centred approaches is presented in Table 3.1.

Table 3 1: Comparison of teacher-centred and student-centred approaches

Classroom activity	Teacher-centred	Student-centred
Lecturer role	Directing and controlling the learning process in terms of goals and objectives.	The student is in charge of the learning process. The lecturer is only a facilitator, who prompts and helps students to develop and assesses their understanding.
Student role	Taking guidance from the lecturer (passive role) as the sole provider of information.	Controlling the learning process and actively engaging with the content.
Manner of learning	Reproduction and application of rote learning, as directed by the lecturer.	Solving problems, role-playing and project-based learning to enhance self-discovery.
Demonstration of success	Reproduction or application with no creative alteration; successful completion of a task in accordance with lecturer direction is a test of performance.	Intelligent construction of meaning through effective presentation and problem solving.
Technology use	Immediate feedback through drills and practice.	A wide range of technological innovations is used in both individual and group activities to inquire and make meaning out of the content being learned.
Source of information	Lecturer and textbook	Lecturer, peers and technological innovation.
Assessment	Lecturer	Lecturers, peers and self.

3.5.1 Blend of both approaches

Some researchers, e.g., Ally (2004), Cronjé (2006) and Sidney (2015), have constructed pedagogic models that are derived from different learning theories. According to Sidney (2015), “A blended perspective of behaviourist and constructivist learning theories creates a combination of guided instruction, appropriate engagement and self-regulated learning” (p. 12). Similarly, Ally (2004) stated that from a blended perspective of behaviourist and constructivist approaches, behaviourism is associated with the teaching of objective facts, whereas constructivist approaches support

cooperative group work activities. Mixing different types of theories would also support different teaching approaches (Ally, 2004). However, there is little in the literature that shows in-depth investigation of the combination of behaviourist and constructivist approaches with ICT integration, so research in this area is needed.

In summary, today's field of education is involved in a debate regarding whether lecturers should use a teacher-centred approach, providing students with information through direct teaching, or a student-centred approach by taking a role as facilitators of learning. However, in this study it is argued that a blend of both approaches in teaching may support student learning and communication.

3.6 Issues with Adopting Student-centred Teaching in Classroom Practice

There is little in the literature that demonstrates in-depth investigation of the challenge of adopting student-centred classroom practice and no examination of factors that might influence the student-centred teaching experience (Windschitl, 2002; Krahenbuhl, 2016; Corkin et al., 2019). The issue of adopting student-centred teaching is more challenging and difficult than any society acknowledges and educationists realise (Schreurs & Dumbraveanu, 2014). Lecturers' beliefs and attitudes towards pedagogy have a major impact on their professional skills and practices (Liu et al., 2017). Some issues have hindered lecturers in implementing constructivist practices. The greatest challenge of using constructivism as the basis for teaching is not acquiring new skills, but difficulties in changing the culture of the classroom to align with the constructivist philosophy, especially given what lecturers see as widespread educational conservatism, which works against efforts to teach for understanding (Windschitl, 2002; Krahenbuhl, 2016).

The few studies reporting problems associated with implementing such learning approaches come from the field of international education, and these report that implementing a student-centred approach (including social constructivist learning) is "riddled with stories of failure" (Schweisfurth, 2011:425) in many developing country contexts. For example, Alsulami (2016) found that lecturers in Saudi Arabia struggled to make the 'paradigm shift' and Liu et al. (2017) reported that Chinese lecturers expressed low levels of support for constructivist learning approaches. Similarly, Bihong and Yu (2014) found that in China, large classes and no time for discussion were still part of the teacher-centred approach and the students were passive and accepted teaching content without any communication. Likewise, Gilakjani et al.

(2013) asserted that lecturers do not have enough time during lessons for discussion; interaction and providing feedback, due to the short amount of time scheduled for classes and large class sizes. Mintah (2014) also found that large classes could be a problem in that they limit the creativity of the students and evaluation is less valid. The main reasons some lecturers preferred a teacher-centred approach in class to using a student-centred approach and tools such as ICT were preparation, time management, and the development of material (Osman et al., 2015). Similarly, Kee et al. (2012) conducted a study in which a large number of lecturers mentioned time constraints as the main reason for adopting a teacher-centred approach.

Another factor is that sufficient resources must be provided for the student-centred method to work. Both students and lecturers lack motivation if they receive limited or no resources (Hew & Brush, 2007). Lecturers sometimes find it difficult to persuade students to talk in class about the subject at hand (Hurst et al., 2013). Moreover, lecturers are more likely to use instructional strategies that are less time consuming, such as lectures, asking questions or taking notes, which offer students little interaction with peers, rather than engaging in group discussions, paired activities planning (brainstorming) and the implementation of open discussion (Hurst et al., 2013).

Lecturers face several issues when utilising a student-centred approach in their classrooms (Windschitl, 2002; Krahenbuhl, 2016). Windschitl (2002) gave four reasons for these issues. The first reason is that difficulties arise from the foundations of constructivism, and in reconciling modern perceptions concerning pedagogy with the epistemological orientations needed to support a constructivist approach. In particular, lecturers' perceptions of science affect the way they value science and technology, hence affecting the way they teach courses on this particular subject (McCauley et al., 2018).

Other research, however, has challenged negative perceptions and provided various reasons that can help explain why actual practices and lecturers' beliefs are mismatched. Khader (2012) suggests that contextual factors can influence lecturers' beliefs and affect their classroom practice. Another study, by Nawaz et al. (2011), indicated that, despite the best intentions, endeavours and supplies, a significant number of instances of ICT integration in teaching fail early, since ICT use is not embedded in the beliefs of the lecturers.

The second factor mentioned by Windschitl (2002) is lecturers' need for a deeper awareness of the subject matter, being acquainted with the art of facilitation,

and coping with novel forms of discourse and collaborative classroom working. Lecturers' academic disciplines may influence their use of strategies involving ICT. It may be that some subjects or disciplines involve more use of ICT than others, there may be stronger traditions of innovation in some subjects or disciplines than in others, or digital resources may be more available in some subjects than others (Windschitl, 2002; Albirini, 2006).

As has already been mentioned, the conventional organisation of the educational system in Saudi Arabia (a predetermined syllabus, limited time, extensive material to be covered, the demands of memorisation, especially for standardised examinations and concern for control in the classroom) is not compatible with a student-centred pedagogical approach and, therefore, a degree of divergence is expected between lecturers' beliefs and practices (Gordon, 2009). Issues such as classroom control (Haney & McArthur, 2002; Martell, 2014), a test-based curriculum (Li, 2018), preparing for standardised state-wide tests (Talbert & McLaughlin, 1993) or large class sizes (Ng & Rao, 2008; Blaik-Hourani, 2011) all hinder lecturers in the implementation of constructivist practices. This potential incompatibility increases research interest in the investigation of lecturers' pedagogical beliefs and approaches and their interrelation with factors such as gender, years of teaching experience, educational level and existing pedagogical training. Correspondence between the beliefs of lecturers and teaching capacity (e.g., a belief in the obligation to implement new instructional techniques such as computer technology in the classroom) and contextual factors (such as university culture and access to technology) may have a strong influence on technological assimilation.

Windschitl's (2002) third factor concerns having to deal with accountability, which involves interacting with diverse stakeholders in the university community, negotiating with other stakeholders and authorities, and upholding teaching for the sake of understanding. Policy perspectives on ICT in education are the main arguments for the sustained use of ICT in education in both developed and developing countries. While classroom innovations may occur without a national policy, they are less likely to be sustained without the guidance of one (Kozma, 2008). Kozma (2008) identified four rationales that are used to justify investment in advancing the use of ICT in education:

1. To support economic development;
2. To advance social improvement;

3. To further educational change; and
4. To help in educational administration.

Beliefs and practice are said to be underpinned by contextual factors, such as institutional cultures (Ertmer, 2005). The influence of Saudi culture on practice cannot be overemphasised. In a classroom setting, the lecturer assumes the role of a parent figure, with authority as the sole proprietor and disperser of knowledge. Students have no voice to question this authority.

The fourth factor identified by Windschitl (2002) is cultural. According to a study conducted by Nzilano (2015) in Tanzania,

“Cultural dilemmas emerge between tutors/lecturers and learners during the radical reorientation of class roles necessary to accommodate the social constructivist ethos. Tutors/lecturers experience challenges negotiating learners’ beliefs and practices to construct local knowledge and providing opportunities to participate in the classroom discourse. Tutors face dilemmas in negotiating between their beliefs and practices in integrating the new approach and the student lecturers’ complex beliefs and practices in the cultural context, which tend to resist sudden changes” (p. 55).

In a national study from 28 countries in Europe, North America, Asia, Africa, and South America, teams employed a widespread set of case analysis techniques to gather data on the educational practices of lecturers and learners, the function that ICT served within these practices, and the background aspects that supported and had an impact upon them (Kozma, 2003). The contextual aspects of any nation and the measurement and evaluation of demographic influences on user views are significant to the effectiveness of digital opportunity programmes for higher learning within a developing nation (Nawaz et al., 2011). In addition, the time required to prepare instruction, which is considerable for many lecturers, is based on a constructivist approach (Blaik-Hourani, 2011). Several studies have focused on pre-service lecturers’ beliefs regarding the constructivist approach (Haney & McArthur, 2002; Jones et al., 2005; Uzuntiryaki et al., 2010).

For this study, which critically discusses the behaviourist, teacher-centred pedagogical approach and the constructivist, student-centred approach, the two approaches provide theoretical perspectives that are used in framing the empirical work discussed in future chapters. After discussing and synthesising the theoretical perspectives in the literature with a broad understanding of behaviourist and constructivist approaches, this research study may be broadly considered as facilitating lecturers’ use of ICT as it might be advantageous in moving towards a broadening of

the pedagogical culture to support students' learning and communication. Thus, the following question arose: What are the main issues around lecturers' use of ICT to support students' communication? The above literature review also led to a concern to understand the issues related to lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication, and the lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication and finally, 'Which demographic and other factors that lecturers view as influencing their use of ICT to support students' learning and communication.

3.7 Summary

This chapter presented a review of the literature on pedagogical issues and discussed two common learning approaches, as well as how they complement ICT application. The chapter also explored the pedagogies that lecturers use in learning and teaching.

The first of the two approaches discussed is the teacher-centred approach, which is more likely to promote learning of a behaviourist nature, whereby students are passive receivers of information and ICT tools are only diverse technological applications (such as CAI) that replace lecturers with computer software.

The second approach discussed was the student-centred approach, which is more likely to promote constructivist learning, whereby students construct their own knowledge depending on past experiences related to their learning. Combining both approaches in teaching may, educationists believe, enable ICT to support student learning and communication. This chapter made numerous comparisons between teacher-centred and student-centred approaches. The final aspects to be discussed in the chapter were the issues encountered when adopting a student-centred approach in classroom practice.

The second part of the literature review conducted for this study is presented in chapter four and specifically focuses on the factors that might influence lecturers' views on integrating ICT within their teaching practice.

CHAPTER FOUR

FACTORS THAT MAY INFLUENCE LECTURERS’ VIEWS ON USING ICT

4.1 Introduction

In the previous chapter, learning theories and the prevailing pedagogy related to integrating ICT in teaching to support student learning and communication were explored. It was argued that ICT could be used to teach students directly or to help them learn to use ICT tools, individually or socially, through a student-centred approach, encouraging student-constructed knowledge and understanding. The main discussion in this chapter is based on the conflict between theoretical assumptions of how educators might use ICT to support student learning and communication. This study reveals that factors related to how higher education lecturers might use ICT and progress with ICT integration in their teaching practices, and factors that might facilitate or hinder their use of ICT, need to be investigated. Barriers preventing integration of ICT in education by lecturers can be divided into two categories: intrinsic or internal (e.g., lecturers’ beliefs, attitudes, backgrounds and skills) and extrinsic or external (e.g., institutional factors). In addition to examining these factors, theories and models of ICT uptake in teaching and learning are examined.

4.2 Lecturers’ Use of ICT

ICT has become an inseparable part of many aspects of our lives and plays a fundamental role in many daily activities, such as business functions, civil service duties, and academic study. Indeed, ICT has become important in education, but not to the degree that it has in other fields. In light of the emergence of ICT and pressure from the Ministry of Education in the KSA to use ICT in teaching processes, lecturers’ use of ICT is an important subject for investigation. As discussed, lecturers are being pressured to use a student-centred approach with ICT. It is evident from the related literature that this transformation is not happening as desired in different universities around the world. This is seen in, for example, work by Hue and Ab Jalil (2013) in Vietnam and Eickelmann and Vennemann (2017) in various European countries, despite the literature reporting that the use of ICT helps prepare learners by developing

skills that “include critical thinking; problem solving; effective communication; creativity; innovation; teamwork, collaboration, and working in diverse teams; project management; and computing, information, ICT, and media literacies” (Kivunja, 2014:85). For most lecturers, ICT is still a tool for presenting information (Davidson, 2012).

The integration of ICT in education has not happened systematically and in some contexts the required changes have not occurred with regard to related factors, such as politics, budgets and conditions (Gura & Percy, 2005). Lecturers’ beliefs, attitudes, and experiences regarding the use of ICT are also very important (Ertmer, 2005; Khader, 2012). In this chapter, these and other factors that create tension between lecturers’ beliefs about the integration of ICT to support student learning and communication and what they claim to do are discussed.

4.2.1 Using ICT to support student communication

Communication has been a crucial element of education for centuries (Lewin & McNicol, 2015), as students must now be able to “exchange, criticise, and present information and ideas” (Ananiadou & Claro, 2009:10). ICT is a vital tool for communicating as part of educational and other social practices (Dintoe, 2018), enabling outreach to a broader audience and faster and more expansive communication at a distance. Therefore, students must have exceptional communication skills so that they can work and collaborate in teams, since communication is an in-demand skill in the 21st-century workplace, especially when there has been a clear move away from manual work (Dede, 2010) and digital tools allow team members to collaborate from various locations and increasingly aid teamwork. There are a number of reasons why education systems should focus on systematically supporting communication development in students. First, teaching communication is very important for the effectiveness of every part of our lives (Khan et al., 2017); employers are also increasingly recognising these skills as essential to managerial success (Ihmeideh et al., 2010). Combining communication with improved learning is important for students’ academic achievement (Khan et al., 2017). In addition, teaching effective communication contributes to the success or failure of students and relates to the quality of the relationship between lecturer and students and how the lecturer is able to build that relationship (Bambaerero & Shokrpour, 2017). Finally, one of the studies exploring this area found that several graduate students identified self-confidence as the

most important factor influencing the extent of communicative competence (Reinsch & Shelby, 1996).

Robust investment in ICT has been witnessed in various education systems globally, with significant budgetary allocations for the acquisition, maintenance, and update of computer accessories for effective teaching and learning, especially in higher education classrooms (Buabeng-Andoh, 2012a; Dintoe, 2018). Trilling and Fadel (2009:16) argued “Achieving education’s goals in our times is shaped by the increasingly powerful technologies we have for communicating, collaborating, and learning”. Likewise, Hue and Ab Jalil (2013:54) asserted that “Today, most countries around the world are focusing on approaches to integrate ICT into learning and teaching so as to improve the quality of education by emphasising such skills as critical thinking, decision-making and working in groups, or communicating effectively”. Therefore, teaching using a student-centred approach involves the use of ICT to help students acquire skills that will be engines for their success in the workplaces and professions of the 21st century (Kivunja, 2014).

Students can prepare for the digital age by learning 21st-century skills, which can be facilitated through the use of ICT and computer programs in the classroom (Ghavifekr et al., 2016) and can have a positive influence on supporting the 21st-century workforce. Lecturers have, through technology, used multiple methods to improve educational experiences since the 1990s (Price & Kirkwood, 2008). For example, Bransford et al. (2000) pointed out that ICT could enhance communication and collaboration skills. To enhance student communication, lecturers have utilised educational virtual learning environments (VLEs), such as Blackboard, wikis, blogs, mobile devices, and social networking. Many studies on integrating technology into educational curricula provide evidence that ICT enhances learning and communication for students (Pheeraphan, 2013; Agrawal & Mittal, 2018) but without indicating the teaching methods, such as constructivist approaches, that lecturers could use to enhance those skills.

One of the many purposes behind using ICT is to enable students to develop their communication more than they would need to in order to simply complete tasks, examinations, reports, or assignments. Typically, lecturers use face-to-face instruction with hands-on activities to develop students’ communication and interaction skills (Flores Alarcia & de Arco Bravo, 2012). However, ICT tools could be used more broadly to deliver lower-level information (e.g., memorising tasks, such as repetition, drills, and practice) as well as higher-level interactions (e.g., sharing learning resources

and spaces; promoting a student-centred approach and collaborative learning principles; and enhancing critical thinking, creative thinking, and problem-solving skills) (Davidson, 2012; Majumdar, 2015). For example, Davidson (2012) conducted a study to evaluate how wikis are used to support communication and collaboration in the higher education classroom. Davidson (2012) found that using ICT improved communication and collaboration in a group project and enabled different barriers to be broken down. In the same vein, Martínez Rivera and Duță (2015) explored the use of ICT in teaching activities in university. They assumed that the use of ICT in university teaching practice is considered a necessity when facing adaptation to higher education. Martínez Rivera and Duță (2015) showed that using ICT in higher education allowed students to communicate effectively, negotiate outcomes, manage time, and practise project management, collaboration, and teamwork skills. As this evidence shows, the growing use of ICT as a tool for everyday life has facilitated the expansion of groups of skills in recent years, and it is highly probable that future developments and technology applications will further develop those skill sets.

Using ICT to support students in becoming effective communicators is one aim of education in today's technologically sophisticated society (Schulz, 2008; Khan et al., 2017). The aim is to equip students with the learning and communication tools essential for acquiring and processing information in an ever-changing world. As one of the goals of education is to supply a mindful workforce, it is essential that communication is integrated into the educational programme (Hurst et al., 2013). Basic knowledge alone is not enough to meet the demands of the job market in the future; effective communication can make a positive change in a student's future working life (Schulz, 2008).

Hurst et al. (2013) noted that communication in the classroom could support students' critical thinking and problem-solving skills. Hurst et al. (2013) found that communication can create a positive environment in which students can learn from each other; it supports the retention of knowledge and the connections between ideas; and, moreover, there is a strong relationship between communication in the classroom and students' learning outcomes. Similarly, Paolini (2015) supported the position that communication allows lecturers to connect with students personally and professionally and noted that students who communicate in the classroom with the lecturer are more academically successful.

In summary, ICT use by lecturers to support student learning and communication is crucial for students to communicate effectively and improve their

workplace and personal skills. To support student communication, lecturers can use various teaching strategies and methods. However, lecturers cannot alter their beliefs with regard to ICT use if they have faced challenges preventing them from using ICT, as explained in the next section.

4.3 Factors Influencing Lecturers' Views on Using ICT

The potential of ICT to enhance higher education has been driving ICT integration in universities. However, if ICT has potential benefits in higher education, what prevents lecturers from using it? Lecturers who work in higher education attribute their lack of use of ICT to a combination of several factors (Rogers, 2000). For the purposes of this study, Rockart's (1979:85) following definition of success factors is used for the integration of ICT in the educational process: "the few key areas where things must go right" and the "limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation". The underlying problem is that it is not clear what factors will create a high level of integration of ICT in Saudi universities, as notion is supported by Bingimlas (2009) and Al Mulhim (2014).

Lecturers hold various views on the use of ICT in education. Lecturers' views are critical to the success or failure of ICT integration in education (Aldunate & Nussbaum, 2013). According to Apeanti (2014:175), "the perceptions of lecturers, especially prospective lecturers, are critical to the success or failure of ICT integrating in the teaching and learning process". Moreover, lecturers' views on the use of ICT can be explained in relation to the way in which they understand the nature of this technology and how it can be used to teach and learn (Barnes & Kennewell, 2017). For instance, Buabeng-Andoh (2012b) reported a strong relationship between lecturers' views on the use of ICT and their actual use of ICT in teaching and learning processes. Buabeng-Andoh (2012b) also maintained that understanding lecturers' views on innovation is key to the successful adoption of ICT in teaching and learning. Similarly, Teo (2008) asserts that there is a positive relationship between lecturers' views on ICT and their intention to use it in their teaching and learning. This study is, therefore, important it aims to understand the issues surrounding lecturers' use of ICT in their teaching to support student learning and communication, and particularly, potential barriers to use.

A barrier is defined as "any condition that makes it difficult to make progress or to achieve an objective" (Schoepp, 2005:2). Several studies have divided the barriers

preventing integration of ICT in education by lecturers into two categories: intrinsic or internal and extrinsic or external (Ertmer, 1999, 2005; Sang et al., 2009; Asiri, 2012; Ertmer et al., 2012; Eickelmann & Vennemann, 2017). Internal (intrinsic) factors are related to the lecturers themselves, such as their pedagogical beliefs towards ICT, their attitudes, and their skills for and experience with using ICT. Internal (intrinsic) barriers have been overcome by training lecturers how to integrate ICT into their teaching practices. In this study, it was important to understand the issues around lecturers use ICT to support student learning and communication. So, the researcher tends to use questionnaire and semi-structured interview to understand the internal factors and external factors that might influence lecturers to integration ICT in their teaching.

External (extrinsic) barriers, such as lack of equipment, funding and Internet access, refer to obstacles that exist in the external environment and have the potential to support or hinder lecturers' use of ICT. Other studies (e.g., Rogers, 2000; Zhao et al., 2002; Asiri, 2012) have categorised barriers based on several factors. For example, the barriers faced by lecturers in higher education can be examined in different categories, such as organisational, technological, and social factors (Asiri, 2012). Organisational barriers refer to "the organisational arrangement to support technology integration in the classroom" (Zhao et al., 2002:503). In addition to organisational factors,

"Technological factors relate to limited access to useful, relevant, and appropriate hardware and software [and there are] socio-cultural factors (e.g., economics and location), demographic factors of the lecturer (e.g., age, gender, attitudes and beliefs or teaching philosophy), and exposure to and adoption of emerging technologies within the practice of teaching (e.g., levels of technology acceptance and adoption) that are included in the activity, goal setting, lecturer's role, and culture" (Rogers, 2000:459).

According to Ertmer (1999, 2005), there are several internal barriers that are mitigated through effective deployment of technology, including development of skill sets in lecturers through in-service and pre-service programmes, particularly in connection to the operation of a computer. For instance, Sang et al. (2009) carried out a study with 820 lecturers in China, using a questionnaire to examine barriers preventing them from using ICT in their classes. The study focused on the impact of internal barriers on the lecturers' prospective ICT use in the classroom, such as constructivist teaching beliefs, gender, teaching self-efficacy, and attitudes towards computers. The study results show that lecturers' attitudes and perceptions were the most powerful predictors of future ICT use. In addition, lecturers with a highly constructivist teaching approach (such as a

student-centred approach) possessed strong intentions to use ICT in their teaching. The following subsection presents a discussion on internal factors that hinder lecturers from integrating ICT resources in their lessons.

4.3.1 Internal factors

The lecturer-related, or internal, factors explored in this study are attitudes, pedagogical beliefs regarding ICT, lecturers' ICT skills and knowledge, gender, ICT competence, teaching experience, lecturer workload, and lecturers' computer self-efficacy.

4.3.1.1 Lecturers' personal (demographic) characteristics and academic background

Lecturers' demographic characteristics have been acted as example of internal factors that are expected to influence their use of ICT in teaching. Such characteristics include gender, age, teaching experience and academic background (Venkatesh et al., 2003). Schiller (2003) found that lecturers' personal characteristics, e.g., lecturer level, gender, age, and attitudes towards ICT, significantly influenced the adoption of ICT into teaching and learning. Both age and gender affect all predictors of technology usage (Venkatesh et al., 2003). Therefore, it is worthwhile investigating how lecturers' personal demographics affect their use of ICT to provide insight into how ICT is integrated differently according to lecturers' personal (demographic) factors.

The gender of an ICT user, and gender factors related to ICT use, has been the subject of much research (e.g., Sefyrin, 2005; Wozney et al., 2006; Islam et al., 2011). Some researchers conclude that there is a gender difference related to accepting or rejecting technology. However, Islam et al. (2011) used a weak and, in places, unspecified methodology, relying heavily on assumptions and the study is of poor quality. Islam et al. (2011:112) used only a questionnaire to collect data using undisclosed approaches to sampling and the method for evaluating the "effectiveness of e-learning" and their conclusions about teaching experience and academic background are therefore, highly unreliable. A UK study (Sefyrin, 2005) revealed that gender differences with regard to ICT competence might be seen as a question of interest in technology, and that women were not as interested in ICT as men. This is also supported in another study, where it was reported that male lecturers used ICT more frequently than female lecturers (Wozney et al., 2006). Similarly, Markauskaite (2006) investigated gender differences in self-reported ICT experiences and ICT literacy among first-year graduate trainee lecturers in Sydney. She found no significant differences between females and males for previous experience with ICT, however, there was a significant difference between females and males related to their technical

ICT abilities. However, other quantitative studies indicated no significant differences between the genders regarding ICT integration (Sarıçoban, 2013; Li et al., 2019). Sarıçoban (2013) conducted a survey of 95 Turkish linguistics lecturers based on the factors affecting lecturers' attitudes regarding adoption of ICT, such as age, gender, subject domain, and computer education. He found no significant relationship between lecturers' gender and ICT usage. Similarly, Li et al. (2019) found that there was no significant difference between males' and females' use of ICT in the classroom, based on a survey of 462 Chinese lecturers in higher education who had adopted a constructivist approach and used ICT tools in class. However, some evidence in quantitative studies identified in the literature indicated that gender is not significant in explaining the acceptance of technology in Quebec in Canada (Khechine et al., 2014), although Venkatesh et al. (2003), in an initial study using the UTAUT model, showed that gender was significant in explaining differences in acceptance of ICT in teaching practice.

In brief, from the review of studies above, it appears that the evidence for specific gender differences in ICT competency is inconclusive. It would, therefore, be interesting to establish how gender affects the perceived ICT use of lecturers in Saudi higher education. It was not possible to pursue this point in detail in the present study, due to the inability in the Saudi culture, for female researcher to have direct access to male respondents see Chapter Two in Section 2.4 on page 26.

From various pieces of research in this field, factors such as age and teaching experience have been cited as key factors that might influence the effective integration of ICT in various universities. As a result, these factors can be seen as critical and require further investigation. The experience of lecturers is an important factor influencing the integration and adoption of ICT in a classroom setting, according to Peralta & Costa (2007) and Hennessy et al. (2010) Research has also shown that individual lecturers' characteristics, knowledge, values, skills, and needs are important predictors of the effective adoption of ICT in teaching and learning (Rogers, 2003). In some instances, compatibility may be elusive, thus points to challenges in the adoption of innovation in teaching and learning (Samarawickrema & Stacey, 2007). In a significant percentage of studies, lecturers' experiences have been known to have a strong correlation with the actual utilisation of ICT (Gorder, 2008; Buabeng-Andoh, 2012a). Woodrow (1992), for example, asserted that for successful use of ICT in educational practice, lecturers need experience and a positive attitude towards innovation. In contrast, other research findings have been reported as noting that

teaching experience did not influence lecturers' use of computer technology in teaching (Niederhauser & Stoddart, 2001). Sariçoban (2013) found that lecturers with less experience generally do not like using ICT in their teaching. Hamari and Nousiainen (2015) found that age might affect lecturers' perceptions of the usefulness of ICT. Therefore, their hypothesis posited that age would moderate the effect of lecturers' perceived usefulness of ICT on their attitude towards technology use. The results showed that lecturers' experience and age were correlated with ICT use in teaching, with younger lecturers being more comfortable with the use of ICT.

It has also been argued that academic background might influence the successful integration of ICT in universities. For example, Orji (2010) found that academic discipline was highlighted as a major factor affecting the integration of ICT. However, the study found that several other factors, such as acceptance of ICT, affected the use of ICT, particularly within the various academic disciplines, such as social sciences, engineering, arts and sciences. Cakiroglu (2008) interviewed a selection of mathematics lecturers and found that participants were negatively affected by ICT use on their course. The findings of the impact of subject area on ICT use are significant, since science lecturers were more in favour of using ICT than non-science lecturers. Subject areas influence ICT adoption demand in the learning and teaching processes, therefore influencing its use in learning institutions. Salteh and Sadeghi (2015) argued that there is a wide range of subjects (e.g., English and mathematics) and specific subject aspects (e.g., geometry and vocabulary) that may affect lecturers' ICT use. Onasanya et al. (2010) also discovered that subject area was significant, since science lecturers favoured integrating ICT into classes more than their non-science counterparts. Lecturers teaching mathematics and science may feel that ICT is unnecessary and that it is unimportant in their teaching for supporting the learning and communication of students because of the broad objectives of those subjects.

4.3.1.2 Lecturers' pedagogical beliefs

As discussed in Chapter Three, lecturers use ICT in multiple ways: some use ICT to deliver information based on a teacher-centred approach and others use ICT to develop student communication and understanding based on a student-centred method. According to Liu (2011), some lecturers believe it is their role to control student learning and they do not use ICT to help students internalise complex information, using technology only for PowerPoint presentations for lecturing purposes. Teaching methods, such as computer-assisted instruction (CAI), can help students acquire

knowledge, but not without communication. For other lecturers with technology access, technical assistants help them develop constructivist (student-centred) activities with ICT tools to develop students' communication. Based on these findings, it can be concluded that lecturers use ICT based on their pedagogical beliefs. Therefore, it would be valuable to investigate ideas in extant scholarships about lecturers' ICT integration practices may be related to pedagogical beliefs, and in particular, the link between ICT and a student-centred approach underpinned by constructivism. Khader (2012) found a strong relationship between lecturers' pedagogical beliefs and their teaching decisions and classroom practice. Lecturers' pedagogical beliefs are shown in their choice of teaching methods, their decision-making regarding activities, and their classroom evaluation (Borg, 2001). There are two teaching and learning concepts related to the use of ICT in the classroom: the traditional (teacher-centred) approach, rooted in behaviourism, and the constructivist (student-centred) approach, rooted in constructivism (Chan & Elliot, 2004; Pšunder & Hederih, 2010). For instance, Voogt (2010) discovered that lecturers who use ICT extensively in their lessons usually have a high level of confidence in their pedagogical ICT skills and are able to increase their focus on a student-centred approach. Lecturers who take a student-centred approach are also more likely to integrate ICT in their classrooms to a considerable extent and in an intellectually productive manner (Jimoyiannis & Komis, 2007; Gyamfi, 2016).

This study was conducted to investigate lecturers' pedagogical beliefs regarding the use of ICT in teaching and learning in supporting student learning and communication. Research has also identified a positive correlation between individuals' beliefs and their behaviour (Fishbein & Ajzen, 1975). This is an argument supported by Pajares (1992), in his assertion that lecturers' beliefs are crucial when conducting educational inquiry because what lecturers believe affects their use of ICT. Therefore, there is a need for the researcher to understand lecturers' beliefs and behaviours prior to conducting a study. In most of the existing studies (both qualitative and quantitative), a strong correlation has been identified between lecturers' beliefs and ICT use in teaching (e.g., Ertmer et al., 2012; Kim et al., 2013) and quantitative studies (e.g., Petko, 2012; Chai et al., 2013). However, according to Mansour (2009), beliefs are among the most challenging concepts to define. Different researchers have explained 'beliefs' in various ways, yet there is no common definition. Researchers in other fields have also observed that the concept of 'belief' cannot be explained easily (Cantu, 2001).

Scholars need, therefore, to be very clear about which lecturers' beliefs need to be studied. Many kinds of beliefs are associated with technology; for instance, ideas about the nature of knowledge, more broadly known as epistemological beliefs (Kim et al., 2013; Deng et al., 2014); the value placed on technology use (Petko, 2012; Mama & Hennessy, 2013); self-efficacy beliefs (Abbitt, 2011; Yau & Leung, 2016); and pedagogical beliefs or teaching and learning beliefs (Ertmer et al., 2012). Lecturers' beliefs are also identified as a major barrier to technology integration (e.g., Hew & Brush, 2007; Ertmer et al., 2012; Kim et al., 2013).

4.3.1.2.1 Consistency and inconsistency in beliefs and practices

The literature has reported different results regarding the consistencies and inconsistencies in lecturers' constructivist beliefs and practices. Therefore, it has been suggested that lecturers hold different pedagogical beliefs based on the extent to which ICT is integrated in their teaching (Hew & Brush, 2007; Ertmer et al., 2012; Kim et al., 2013). To understand educators' teaching practices and what leads to greater integration of ICT in the classroom, there is a need to explore lecturers' perceptions and beliefs regarding innovative teaching approaches, such as the use of technologies (Ertmer et al., 2012). When lecturers' pedagogical beliefs are consistent with ICT use, it is possible for the presence of technology in the learning environment to increase (Zhao et al., 2002). In other words, lecturers whose pedagogy is constructivist is more likely to be interested in ICT use in teaching and learning.

A review of the research literature revealed an ongoing debate about the relationship between lecturers' beliefs and their teaching practices. Some of the research reports consistencies in lecturers' beliefs and practices (Beswick, 2006; Obenchain et al., 2010; Barrot, 2016). Barrot (2016) explored teaching beliefs and practices by interviewing and observing five experienced English lecturers in the Philippines and found that there were some consistencies. The results from Barrot's study indicated these consistencies could be attributed to several factors, such as attitudes and beliefs towards students and the level of awareness of student-centred approaches. However, other researchers found inconsistencies between beliefs and practices (Khader, 2012; Mansour, 2013; Tamimy, 2015). For example, Tamimy (2015) investigated the relationship between lecturers' beliefs and classroom practices by interviewing and observing five Iranian lecturers. The results of that study reflected inconsistencies between the lecturers' beliefs and real class practices. The study revealed that the main reason for this inconsistency was teaching experience. In another

example, Mansour (2013) conducted a study in Egypt with four science lecturers to gain a better understanding of their beliefs and classroom practices. Mansour (2013) collected his data from interviews and notes taken while observing classes. He found there was inconsistency between lecturers' beliefs and practice and that culture and religion-influenced lecturers' views on integrating ICT in the classroom. However, because of the small sample in this study, it is not possible to generalise his conclusion.

In this study, the emphasis was on developing insights relating to the factors responsible for the differences between lecturers' practices and their beliefs. The study, moreover, explores various factors that influence lecturers' use of ICT in an attempt to explain the difference in their practices and behaviours in terms of their experience, cultural context, and personal beliefs, which inform their broader mind-sets in connection with their constructivist practices, traditional practices, constructivist beliefs, or traditional beliefs.

4.3.1.3 Lecturers' attitudes towards ICT

The effective and successful use of ICT in the classroom seems to depend on, and might be influenced by, lecturers' attitudes towards ICT. Fishbein and Ajzen (1975:6) noted that an "attitude can be described as predisposition to respond in a consistently or unfavorable manner with respect to a given object". The attitudes of lecturers towards ICT may be to varying degrees positive or negative. Attitudinal paradigms include behaviour, cognition or affect, with the affective paradigm of attitude referring to the lecturer's emotional reaction to a person or object, the cognition paradigm taken to mean the lecturer's real knowledge of a person or object, and the behavioural paradigm denoting a lecturer's overt behaviour directed towards a person or object (Onur Bodur et al., 2000). It can be categorically stated that lecturers' attitudes are a critical determiner of their use of ICT in teaching and learning (Hew & Brush, 2007; Buabeng-Andoh, 2012b; John, 2015; Eickelmann & Vennemann, 2017).

Some of the reasons for the failure of lecturers to integrate ICT in their teaching include their belief that neither the students nor themselves benefit from ICT use (Buabeng-Andoh, 2012b). However, if lecturers believe that the use of ICT is beneficial to the students, they will integrate ICT in their teaching and are ready to overcome barriers related to ICT use (Teo, 2008; Asiri, 2012).

Moreover, lecturers can provide good insight into the integration of ICT in their teaching and learning (Buabeng-Andoh, 2012b). For example, John (2015) conducted a study to identify the success factors that influence lecturers in integrating ICT in their

teaching and learning practices. John (2015) employed a survey with 261 lecturers in leading universities in the Asian region. The universities encouraged their lecturers to use new ICT for the preparation and delivery of lessons in the classroom. In the current study, various factors affecting the use of ICT are examined, including qualifications, age, computer proficiency, and teaching experience; a process informed by the diffusion of innovation theory. The findings of the study show that the use of ICT as well as attitude towards it are some of the main factors that influence lecturers' use of ICT in teaching and learning processes. This is a viewpoint supported by Teo (2008) in his argument that assessing lecturers' attitudes is a good starting point in understanding the acceptance, and integration of ICT in teaching and learning.

If lecturers have negative attitudes towards ICT, those attitudes may become a major barrier to adopting ICT in practice (Rogers, 2000; Bingimlas, 2009). Negative attitudes can be caused by factors such as lack of understanding about how technologies will benefit lecturers and uncertainty about management guidance and support (Bingimlas, 2009). Jimoyiannis and Komis (2007), who examined 1,165 lecturers' attitudes towards using ICT in teaching, found that three distinct attitude groups existed: positive, negative, and neutral. They found personal factors (e.g., teaching experience, subject matter and gender) were strongly associated with the attitudes and perceptions lecturers held about ICT in education (Jimoyiannis & Komis, 2007).

The literature supports the idea that inadequate lecturer training in the skills and understanding needed to use learning technologies effectively is one of the biggest barriers towards its being implemented (Bingimlas, 2009; Ageel, 2011). Lecturers might lack adequate computer skills to use digital technology in their subject areas appropriately to support student learning and communication; so training must address this need (Bingimlas, 2009; Koehler & Mishra, 2009; Kunda et al., 2018). A very recent study conducted by Kunda et al. (2018) investigated the factors that influence Zambian higher education lecturers' attitudes towards integrating ICT in their teaching and learning. The study supports Koehler and Mishra (2009) in that the lack of skills may prevent lecturers from using ICT in their teaching.

Therefore, it can be concluded that lecturers' attitudes towards ICT use in teaching and learning processes are determined by several factors, such as effective lecturer training programmes, suitable qualifications, age, computer competence, ICT experience and skills, perceived ease of ICT use, and perceived ICT usefulness. The review of the existing literature in this area shows that a lot of effort (training) may be

needed to help lecturers develop positive attitudes towards ICT integration in teaching and learning, especially in relation to integrating ICT in their pedagogical approach.

4.3.1.4 Lecturers' ICT skills and competencies

ICT competencies and skills are key to the adoption of ICT use in teaching and learning processes. According to Osika et al. (2009), a lecturer's ICT competence can be defined as the ability of the lecturer to use ICT in a wide range of areas, purposes or applications. Peralta and Costa (2007) emphasise that lack of ICT skills and competencies is one of the major factors that influence lecturers' refusal to integrate new ICT into their teaching practice. Evidence suggests that many lecturers who have negative attitudes regarding integrating ICT in teaching and learning processes lack the ICT skills and competencies that would allow them to make informed decisions in this area (Al-Oteawi, 2002; Osika et al., 2009; Dintoe, 2018; Lawrence & Tar, 2018).

In quantitative studies, research has been carried out on lecturers in higher education in various countries in relation to their confidence and competence levels. For instance, Tasir et al. (2012) carried out research with 184 Malaysian lecturers and discovered that ICT competence significantly influences confidence levels in ICT use. However, lecturer satisfaction regarding ICT training programmes was moderate. In Singapore, Teo (2008) suggested that greater experience with ICT would permit lecturers to gain training and competence in ICT use for effective learning and teaching.

Qualitative studies on competence and confidence levels in lecturers in higher education have also been conducted in various countries (Peralta & Costa, 2007; Lawrence & Tar, 2018). For example, a study conducted in Italy by Peralta and Costa (2007) found that lecturers were influenced by technical competence in their decisions to use ICT in teaching. However, the lecturers cited rote learning and pedagogical factors as important issues for the effective and efficient integration of ICT in teaching. Lawrence and Tar (2018) concluded that lecturers' competence related directly to confidence. Lecturers' confidence is important in relation to their perceptions of their ability to use a variety of ICT applications in the classroom.

Many researchers have conducted related studies in Saudi Arabia (e.g., Al-Oteawi, 2002; Bingimlas, 2009; Alwani & Soomro, 2010; Asiri, 2012). For example, Bingimlas (2009) found from a meta-analysis that lack of lecturer competence was related to another barrier, lack of confidence regarding the use of ICT, which led to lecturers' resistance to implementing ICT in their teaching activities. Similarly, Asiri

(2012) asserted that lecturers' ICT competence has a positive impact on the adoption and integration of ICT. Bingimlas (2009) and Al Mulhim (2014) suggested training strategies might have a significant influence on ICT competence. It has also been suggested that help for lecturers to develop their knowledge, skills, and practice in relation to effective ICT integration could be informed by the TPACK conceptual modal (Oberdick, 2015). It is insufficient for lecturers to specialise only in the topics and content delivered by them in the classroom; lecturers also need to be familiar with other pedagogies available for teaching the material (Oberdick, 2015). The TPACK framework is critical in providing help for lecturers to make major and informed decisions relating to what ICT technology is appropriate for their teaching (Oberdick, 2015). Moreover, this framework enhances understanding of the teaching content in relation to applying appropriate teaching methodologies and technologies.

From the above, it can be stated that effective use of ICT in teaching and learning processes is dependent on the pedagogical approach adopted. In addition, if a student-centred approach has been chosen, lecturers must have sufficient knowledge and skills for the effective integration of ICT. Koh et al. (2014) posited that the effective use of ICT is strongly dependent on the lecturer's knowledge and skills. This implies that a lack of knowledge is a major barrier to effective use of ICT in teaching. It also suggests that lecturers must be equipped with the right skills and knowledge in order for them to integrate ICT effectively in their teaching (Benton-Borghini, 2013). Many developing countries have tried to expand their lecturers' competencies in using ICT. In Saudi Arabia, for example, there are education supervisors who occasionally observe lecturers' classrooms and then discuss their teaching methods with them, the material they use in their teaching, and how they use ICT in their teaching practice. However, there is a lack of evidence as to whether the lecturers had the necessary skills and competencies to implement ICT. Generally, studies have revealed that lack of ICT competencies on the part of lecturers is a major barrier to effective use of ICT in teaching and learning processes in most of the developing economies, including Saudi Arabia (Ageel, 2011; Asiri, 2012).

4.3.2 External factors

With regard to external factors, there are conflicts, contrasts, and tensions around views between what is expected and how this impacts what lecturers might do.

4.3.2.1 Leadership support

In order to address the challenges of ICT use in teaching, institutional support is required, especially from universities in the deployment of ICT in teaching (Lawrence & Tar, 2018). The leadership of universities should be strong and visionary enough to inspire lecturers to employ ICT in their teaching (Lawrence & Tar, 2018; Ritzhaupt & Hohlfeld, 2018). This is one of the areas of advocacy by BECTA (2004), which suggests that good leadership is needed for the effective use of ICT in teaching in British schools. BECTA (2004) further states that leadership and management quality are key to the adoption and integration of ICT in teaching and learning processes, a view supported by Albugami and Ahmed (2016). According to Buabeng-Andoh (2012b:145),

“This aspect of leadership will help the principal to share tasks with subordinates while focusing on the adoption and integration of technology in the school. Institutions exemplified by executive involvement and decision-making, strengthened by an ICT plan, effectively adopt ICT integration curriculum”.

4.3.2.2 Lack of effective training

Lack of effective training related to the use of ICT can be further obstacle to integrating ICT in the classroom. Generally, lecturers seem to want to learn how to integrate ICT into their teaching effectively; however, a lack of pedagogical training could hold them back (Bingimlas, 2009; Ertmer et al., 2012). This is a crucial barrier, since numerous newer technologies exist on the market for mainstream teaching. Thus, lecturers require training and re-training in new technologies to ease integration. Lecturers are also being recruited by educational and research bodies, which requires in-service training to increase familiarity with technology. However, a lack of in-service and re-training in ICT has been identified (Akbaba-Altun, 2006; Ertmer et al., 2012). Similarly, Al Mulhim's (2014) research in six different cities in Saudi Arabia found that most of the lecturers in several universities in Saudi Arabia lacked of ICT training, skills and appropriate teaching methodologies to support ICT use, leading to a low level of ICT integration in teaching.

In Iran, Afshari et al. (2009) found that most ICT training needed to address personal circumstances, stressing teaching technology at the expense of teaching with technology. In a recent study, Nelson et al. (2019) pointed out that if lecturers are not provided with the training and resources they need, they may not be able to use technology in their teaching effectively, making it difficult to integrate technology into a teaching approach. The results suggest that it may be useful to provide lecturers with opportunities to develop the skills suggested by the Technology pedagogy and content knowledge TPACK model and should be trained in an environment in which they learn to value how technology will help them better perform their jobs as lecturers and where they feel that they are skilled in using technology (Nelson et al., 2019). Moreover, in a study conducted by Hismanoglu (2012) in Turkey that examined the attitudes and perceptions of lecturers teaching English towards ICT use in teaching and learning, the findings indicated that the paper examination system, emphasising only what is to be tested, and lack of training were some of the main hindrances to the effective use of ICT in teaching. The findings of this study clearly show that despite having basic ICT skills, English lecturers were not confident in using ICT in their teaching. As a result, these factors shaped the lecturers' beliefs about using ICT in teaching.

Some researchers have argued about the quality of ICT training for lecturers. One researcher noted that training to integrate ICT in teaching is a significant influence on the use of ICT in teaching (Al Mulhim, 2014). Bingimlas (2009) indicated that in order to integrate ICT in their teaching, lecturers need training on ICT combined with effective pedagogy training. Consistent with this view, Abuhmaid (2011), in a study of ICT training colleges in Jordan, pointed out that time constraints on ICT training, lack of a follow-up or support system, and incompatibility with the lecturers' aims for teaching had led to ineffective employment of ICT in teaching and learning processes, worsened by a lack of clear goals for applying ICT skills.

Consequently, for lecturers to deploy ICT effectively in their teaching, they need to have positive attitudes and knowledge of the potential benefits of ICT integration in teaching (Mumtaz, 2000; Rogers, 2003; Hismanoglu, 2012). The importance of ICT training has been highlighted in much of the research (BECTA, 2004; Albirini, 2006; Bingimlas, 2009; Khan et al., 2012). Those researchers recommend the creation of an improved learning environment, i.e., learning by doing, which may positively affect lecturers' beliefs. The research indicates that lecturers may not have sufficient computer skills to use digital technology appropriately in their

subject to support student learning and communication, and training needs to address this (Bingimlas, 2009; Koehler & Mishra, 2009).

4.3.2.3 Technical support

Technical support is crucial to influencing the adoption of ICT by university lecturers, and if technical support is not available, lecturers should have some basic troubleshooting skills to overcome the more minor problems they face when using ICT in their teaching. Lack of such troubleshooting skills negatively affects their views on using ICT in their teaching. Therefore, providing technical and instructional support would be a key factor for lecturers in adopting ICT (Bullock, 2004). While lecturers can have good teaching skills, their knowledge of using ICT in their teaching remains limited (Oye et al., 2011). Ghavifekr et al. (2016) used questionnaires to survey 120 Malaysian lecturers and found that over half the respondents claimed that a lack of technical support hindered their adoption and integration of ICT. Similarly, Yilmaz (2011) assessed the processes of technology integration in the Turkish education system and discovered institutional provisions of hardware and Internet connections, alongside providing universities with technical support, repair, and maintenance, which are crucial for continued educational use. Another study investigated factors that influenced Serbian lecturers' intentions to use ICT in their instructional practice (Teo & Milutinovic, 2015). The researchers conducted a survey of 313 lecturers attending educational programmes in two universities and their results showed a positive relationship between technical support and ICT use intention in the classroom (Teo & Milutinovic, 2015).

The above findings indicate that where technical support for lecturers does not exist, educators might become frustrated, which results in their unwillingness to use ICT (Tong & Trinidad, 2005). Tong and Trinidad (2005) argued that university support influences lecturers' decisions to apply ICT without wasting time troubleshooting hardware and software issues.

The various studies referred to above have, therefore, indicated that ICT integration is not only influenced by the ICT infrastructure, but also by the technical support.

4.3.2.4 Lack of time

Time is a major factor affecting the effective use of ICT. It must be noted that using ICT in teaching requires more time than teaching using traditional pedagogical approaches, especially when preparing for lessons and anticipating potential challenges and how to address them (BECTA, 2004). A significant percentage of studies have pointed out that time limitations in scheduling effective ICT resources in a lesson is a major challenge to using technologies in teaching (Arokiasamy, 2012). This is a viewpoint supported by the findings of a study conducted by Johnston and McCormack (1996), which pointed to a lack of time to use ICT and time constraints related to developing ICT (technology-based) material as key factors affecting the use of ICT in teaching. Moreover, Butler and Sellborn (2002) argued that a lot of time is usually needed to learn how to use new technologies in various learning institutions.

Consequently, Dawes (2001) cautions that good time management in the use of ICT, particularly the Internet, must be observed since the Internet can absorb a lot of time to the detriment of communication. It is important to note that several studies have shown that a significant percentage of lecturers have the requisite knowledge and skills as well as competence to use computers in teaching and learning. However, most of them do not employ ICT in their teaching due to time constraints. In this connection, time limitations as well as scheduling difficulties for sufficient ICT use in class are a major challenge identified by most studies (Beggs, 2000; Al-Alwani, 2005; Schoepp, 2005; Kafyulilo et al., 2016). According to Beggs (2000), lecturers reported that limitations on time when planning a technology-integrated lesson, searching for relevant material on diverse Internet sites, and finding the right software were major hindrances to effective use of ICT in teaching and learning processes. In another example, Kafyulilo et al. (2016) explored the continuation of ICT use among mathematics and science lecturers who attended a professional development programme. Interviews were conducted with 12 Tanzanian lecturers and the data revealed that there were some challenges that all the lecturers faced when using ICT in their teaching: lack of time, large classrooms, problems with electricity supply and lack of technology tools. All those factors prevented lecturers using ICT in their teaching.

BECTA (2004) pointed out that the additional time needed to prepare for an ICT-integrated lesson is a major challenge that limits lecturers' use of ICT, especially in terms of locating appropriate Internet material, exploring and practising using the

ICT material, and preparing an ICT-integrated lesson. Inadequate training and technical problems in the use of ICT compound such problems. In a study conducted by Zare-ee (2011) in three Iranian universities involving 115 randomly selected full-time lecturers, the findings indicated that lecturers in those universities had a positive attitude towards ICT use. Nevertheless, in practice, their adoption of ICT in class was poor, due to challenges such as lack of time, limited training, and insufficient resources. In addition, most of the students were also unable to use ICT, which required lecturers to take more time preparing lessons and training students in ICT use.

In Saudi Arabia, Al Asmari (2011) commented on the lack of time to prepare ICT materials for lessons. For successful integration of ICT tools, there is a need for constant collaboration between all participants and sufficient time to learn and use ICT (Bingimlas,2009). According to Al Mulhem (2014:39), “Many Saudi studies agree with the findings of the international studies and conclude that academic staff do not have sufficient time for training and preparation of e-learning”.

In brief, it can be stated that lack of time is a challenge to ICT use for lecturers who are already burdened with teaching requirements. For example, each a lecturer has to teach between 16 to 18 hours per week as well as the final exam is scheduled during the Eighteen weeks.

4.3.2.5 Accessibility

The level of ICT access in universities is defined as lecturers’ access to infrastructure, the adequacy of the resources provided, and teaching time available for using ICT. As mentioned earlier, several factors hinder lecturers’ effective use of ICT in teaching. These factors include a shortage of ICT infrastructure in universities, as well as limited access to ICT resources. There is a need for universities to have up-to-date software and hardware in order to facilitate ICT integration in teaching (Trucano et al., 2007). It is important to note that the effective adoption and integration of ICT in teaching and learning processes is largely dependent on both access to and availability of ICT resources, such as hardware and software, within a learning institution. If ICT resources are not available, lecturers will not be able to use them, implying that a lack of ICT resources is a major challenge limiting their effective use, as well as the integration of technology in teaching (Buabeng-Andoh, 2012b).

The challenges faced in every context (or country) are also many and diverse (Trucano et al., 2007). For instance, in South Africa, there has been significant progress in ICT infrastructure for education, such as the North Africa Educational Technology

Adopters 57 Africa, which have invested heavily in ICT resources in terms of high bandwidth connectivity to Europe. On the other hand, Trucano et al. (2007) provided a list of other African nations, including Nigeria, Algeria, Senegal, Somalia, Rwanda, and Malawi, which face constant conflicts and economic instability, which hinders ICT development in the education sector. Consequently, concerted and directed efforts are needed in those countries to fast-track ICT development. The main obstacles facing African education systems are a lack of infrastructure, accessibility and networking, high Internet and telephone costs, limited skills and expertise, and no enabling national policies (Trucano et al., 2007; Ojuloge & Awoloye, 2012). Similarly, Bingimlas (2009) discovered that low numbers of computers, antiquated ICT systems, and scarce educational software programs were barriers to the successful implementation of ICT in Turkish universities. Likewise, Al Mulhim (2014) found that having no Internet access during university time and a lack of hardware hindered the integration of technology into Saudi higher education. Issues in Saudi Arabia are extensions of problems experienced elsewhere. Al-Busaidi et al. (2016) reported a lack of software in the classrooms and that most of that software did not support the Arabic language both of which are clear barriers. Al Mulhim (2014) agreed with this point and further mentioned institutional barriers, such as the lack of technical support, Internet access and effective training, and, finally, the high cost of hardware and software.

The following issues were reported as reasons for Saudi lecturers' limited use of ICT, specifically the Internet and computers (Meenakshi, 2013):

- 1) Poor software design.
- 2) Lack of administrative support.
- 3) The additional effort and time required to learn how to use technology and apply it in the classroom.

Lack of appropriate knowledge regarding ICT use, difficulty in responding to changes in hardware and limited budgets for purchasing ICT may make it difficult to manage integration. The money spent on ICT systems by universities in Saudi Arabia is also of great concern (Alturise & Alojaiman, 2013). All these barriers, internal, external and environmental, may affect the use of ICT in the classroom to support student learning and communication. Mumtaz (2000) highlights that access to ICT is the first step to integrating ICT. However, the availability of ICT is not the only factor: lecturers need to use ICT in the classroom, to integrate educational software and explore various Internet sites, a process that can be difficult. A strong positive

correlation exists between ICT resource availability in the classroom and lecturers assigning tasks to students to ensure that ICT will be applied (Smerdon et al., 2000). The problem of limited Internet facilities and obstacles such as lack of resources and time is compounded by a rising number of students for whom colleges are incapable of providing sufficient resources (Al Mulhim, 2014).

In brief, it can be stated that the accessibility of ICT resources is not always the same as the accessibility of hardware and software or other ICT materials in universities, because even when ICT resources are available, if they are not well organised, it can lead to ineffective use. Therefore, a number of factors can be seen to affect the use of ICT, such as lack of access to ICT resources for lecturers, inappropriate software, and poor-quality hardware. Moreover, even if these problems are overcome, there are various attitudinal and contextual factors that also influence ICT acceptance and integration.

The following section draws attention to some models and theories that provide insight into the factors that could affect lecturers' integration of ICT in their classroom practice.

4.4 Theories and Models of Integrating ICT in Teaching and Learning

“Technology is of little value unless it is accepted and used” (Samaradiwakara & Gunawardena, 2014:21). This study examines examples of theoretical models that have been applied for integrating ICT in teaching and learning. Theories can come in various shapes and have different purposes. A common function of most theories is to draw attention to an important factor in the research context. One method is that a theory offers a view on behaviour or learning, drawing attention to that which is important. Rather than specifying the whole situation, a model provides a perspective on what is worth examining, making it easier to compare situations with identical concepts. Lecturers vary in the degree to which they accept the use of ICT in their teaching. Therefore, examining why individuals accept or reject certain technologies has been demonstrated as one of the most challenging issues in research (Davis et al., 1989). In this study, more than one model has been used to explain the process through which ICT can be adopted.

With regard to ICT take up, a theory can attempt to capture something significant regarding the participants, their culture, values, and, potentially, the environment. These models aid understanding of the research factors and their relationships with each other. One reason for conducting the research was to identify

the factors influencing ICT use in order to guide the study. The review of the literature found categorisations of why some lecturers use ICT and the established related models. However, only a limited amount of empirical research has focused on the relationships between the TAM, UTAUT and TPACK (Alsofyani et al., 2012; Adam, 2017; Luhanya et al., 2017). Each theory regarding ICT take up is briefly discussed below; the models are presented in chronological order.

4.4.1 Technology acceptance model (TAM, 1989)

TAM is one of the models most frequently used by information system academics and practitioners and is considered an extension of the theory of reasoned action (TRA): “A key purpose of TAM is to provide a basis for tracing the impact of external variables on internal beliefs, attitudes, and intentions” (Davis et al., 1989:985). TAM is “helpful not only for prediction but also for explanation” (Davis et al., 1989:985). Therefore, TAM is an extremely helpful model for researchers because it can be used to explain and understand the variables that might influence acceptance of new technology (Figure 4.1).

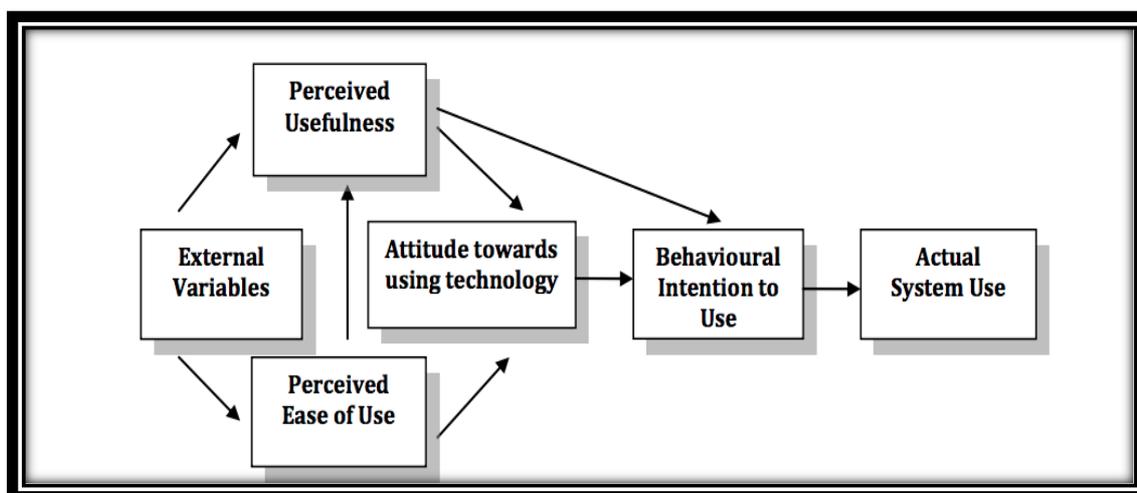


Figure 4.1: Technology acceptance model (Davis et al., 1989)

The first TAM dimension is perceived ease of use, which is defined as “The degree to which, a person believes that using a particular system would be free of effort” (Davis, 1989:320). According to Watson (1998), lecturers possessing skills and competencies in using ICT technology in their teaching make ICT use easier. Therefore, lecturers’ perceived ease of use towards ICT is viewed as a determining factor regarding ICT integration in the teaching process. Teo and Milutinovic (2015) conducted empirical research in Serbia that showed perceived ease of use and perceived usefulness had a significantly positive effect on attitude towards using ICT technology; perceived behavioural control was important in explaining lecturers’

acceptance. Similarly, Scherer et al. (2019) argued that ease of use is a key variable that directly or indirectly explains lecturers' ICT use in their teaching because it refers to the degree to which lecturers believe that using ICT would be free from effort. In this study, ease of use is defined as the degree to which lecturers believe using ICT would be free from effort when attempting to enhance students' learning and communication.

The second TAM dimension, perceived usefulness, is defined as "the degree to which, a person believes that using a particular system would enhance his or her job performance"(Davis, 1989:320). Thus, perceived usefulness refers to lecturers' evaluation of how useful ICT is in their classroom teaching. For lecturers to appreciate using ICT in the classroom, they must see how ICT is useful for their teaching. For example, Lawrence and Tar (2018) interviewed four lecturers in Nigeria regarding their perspectives on ICT implementation and integration into teaching and learning. The results revealed that the benefits of using ICT, the perceived usefulness of ICT, and the perceived ease of use of ICT influenced the lecturers to perform teaching and learning activities in the classroom that utilised ICT. Similarly, Isiyaku et al. (2018) conducted a study on lecturers' perceptions of the usefulness of ICT in the classroom, drawing on a technology acceptance survey involving 212 lecturers from business education in Nigeria. The study revealed that the lecturers' skills and self-efficacy significantly influenced their view of ICT usefulness (Isiyaku et al., 2018). In this study, usefulness refers to the degree to which lecturers believe that using ICT will enhance their performance while teaching as part of the learning process to improve students' learning and communication.

The third dimension, attitude, is defined as "an individual's positive or negative feelings (evaluative affect) about performing the target behaviour" (Fishbein & Ajzen, 1975:216). Thus, attitude is a person's predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). For instance, Zhang et al. (2008) remarked that attitude has a vital role in people's judgements, evaluations, and behaviours. In support of this idea, Eickelmann and Vennemann (2017) stated that lecturers' beliefs and attitudes towards ICT use were influential factors in making lecturers use ICT in education. Scherer et al. (2019) combined meta-analysis with structural equation modelling approaches to evaluate the application of TAM and its versions with a small number of lecturers. The analysis results provided evidence of the high reliability and validity of TAM variables and their resulting scores. Two

perceptions—usefulness and ease to use—are directly related to another TAM core variable: attitudes towards technology. The research findings contribute to the current literature, including the presence of conflicts between certain relations across the meta-analysis; for example, the effects of perceived ease of use and usefulness on lecturers' attitudes towards using ICT in the model and the primary TAM core variables relating to behavioural intentions and technology use (Scherer et al., 2019).

Overall, based on TAM, the assumption is that attitude can determine the behaviour to accept or reject ICT use (Elkaseh et al., 2015). TAM is still considered a powerful model to explain technology acceptance (Scherer et al., 2019). Therefore, the comparisons confirm that TAM is parsimonious and easy to apply in its structure and shows great usefulness and ability to explain factors that include population, time, and context. Also relevant to this ICT adoption study in higher education, Samaradiwakara and Gunawardena (2014) noted that TAM determined lecturers' technology acceptance and, therefore, could be applied to explain lecturers' behaviours in a broad range of end user computing technologies and groups. Moreover, TAM is easier to implement than the UTAUT model and provides an inexpensive way to gather general information about lecturers' perceptions of using ICT. Legris et al. (2003) also claimed TAM to be a useful model. However, many researchers have tried to extend TAM, which created confusion.

4.4.2 Unified theory of acceptance and use of technology (UTAUT, 2003)

In 2003, Venkatesh et al. investigated TAM and its hybrids to produce a unified model that integrates the theory of reasoned action (TRA), TAM and its mixtures, planned behaviour theory (PBT), the motivational model (MM), the model of personal computer utilisation model (MPCU), social cognitive theory (SCT), and innovation diffusion theory (IDT). The UTAUT model incorporates four key determinants: (1) effort expectancy, (2) performance expectancy, (3) facilitating conditions, and (4) social influence. The effects of these determinants are hypothesised to be qualified by four major moderators to affect use of technology: (1) age, (2) experience, (3) gender, and (4) voluntariness (Venkatesh et al., 2003) (see Figure 4.2).

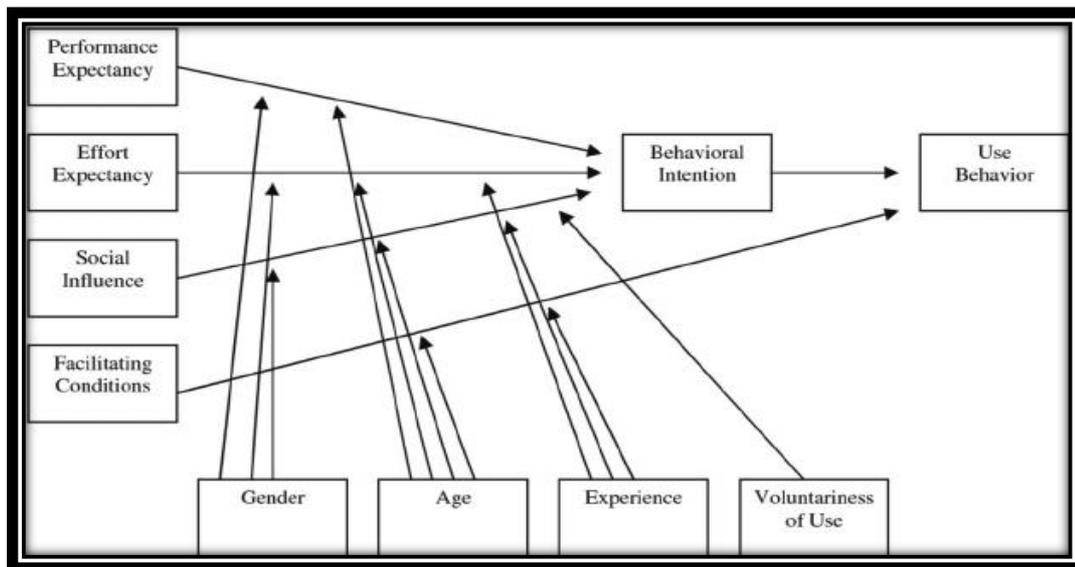


Figure 4.2: Unified theory of acceptance and use of technology (Venkatesh et al., 2003:447)

The models and theories on which UTAUT draws have been used extensively in previous studies of technology acceptance and adoption within many disciplines, including management, social psychology, marketing and information systems (Venkatesh et al., 2003). Table 4.1 shows the root constructs of the elements of each theory, together with relevant models and references.

Table 4.1: Origin of UTAUT root constructs

UTAUT constructs	Definition	Root constructs and theories	References
Performance expectancy	“The degree to which an individual believes that using the system will help him or her attains gains in job performance” (Venkatesh et al., 2003: 447).	Perceived usefulness (TAM/TAM2 and CTAM-TPB)	Davis (1989)
		Extrinsic motivation (MM)	Davis, Bagozzi, and Warshaw (1992)
		Job-fit (MPCU)	Thompson et al. (1991)
		Relative advantage (IDT)	Moore and Benbasat (1991)
		Outcome expectations (SCT)	Compeau and Higgins (1995)
Effort expectancy	“The degree of ease associated with the use of the system”	Perceived ease of use (TAM)	Davis (1989)
		Complexity (MPCU)	Thompson et al. (1991)

	(Venkatesh et al., 2003: 450).	Ease of use (IDT)	Moore and Benbasat (1991) and Roger (2003)
Social influence	“The degree to which an individual perceives that important others believe he or she should use the new system” (Venkatesh et al., 2003:451).	Subjective norms (TRA, TAM/TAM2, TPB and CTAM-TPB)	Ajzen (1991), Davis (1989), Fishbein and Ajzen (1975), Taylor and Todd (1995)
		Social factors (MPCU)	Thompson et al. (1991)
Facilitating conditions	“The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system” (Venkatesh et al., 2003:453).	Perceived behavioural control (TPB and CTAM-TPB)	Ajzen (1991), Taylor and Todd (1995)
		Facilitating conditions (MPCU)	Thompson et al. (1991)
		Compatibility (IDT)	Moore and Benbasat (1991)

Venkatesh et al. (2003) evaluated the theories and models in the table above in terms of their similarities, differences and capabilities in clarify individuals' acceptance of technology. The UTAUT model provides an explanation of how the use of technology is influenced by individual differences. The researchers conducted two studies for empirical validation of the UTAUT model, which represents a high explanatory ability (Venkatesh et al., 2003). To test the proposed model, Venkatesh et al. (2003) surveyed employees drawn from four organisations using different systems. The survey indicated that the model was strongly supported, with the relationship between the variables being significant. Therefore, although the use of survey data limits what can be claimed (for example, it is not clear how representative the sample was) the UTAUT model can be said to be useful for research on technology acceptance, as it provides good insight into why a user accepts or rejects a certain technology. Using this model, it was also found that other models were able to explain users' acceptance of a technology up to 40% of differences in technology accepting, whereas UTAUT explains user technology acceptance up to 70%. Furthermore, UTAUT model has been shown to have 20% to 30% higher explanatory power compared with TAM, which generally provides 40% to 50% explanatory power regarding the behaviour or behavioural intentions of the end user (Venkatesh et al., 2003). However, the model is limited in terms of the content validity associated with

measurement procedures and, therefore, the authors recommend future research that would target the development and validation of appropriate scales for each construct, while emphasising content validity and extending or performing the revalidation of UTAUT with new measures (Venkatesh et al., 2003). Teo (2011) also points out the importance of evidence from research to technology acceptance, as it has implications for a range of education stakeholders, including lecturers, administrators, students, and policy makers. The UTAUT and TAM models share similarities in their conceptualisation (Nistor & Heymann, 2010). However, UTAUT is more, because of the hypothesised moderation effects, complicated and difficult to test, which has resulted in its being severely criticised by many experts, more so than TAM.

Van Raaij and Schepers (2008) compared TAM and UTAUT and found that “UTAUT’s very reliable to achieved when moderating the key relationships with up to four variables (gender, age, experience, and voluntariness) in order to yield more significant coefficients. This makes the model less parsimonious than TAM” (p. 840). According to Lai (2017:32), “UTAUT might be a powerful model due to its parsimonious structure and higher explanatory power”. However, the UTAUT model “did not examine direct effects which might reveal new relationships as well as important factors from the study which were left out by subsuming under the existing predictors only” (Lai, 2017:32).

It should be noted that in spite of UTAUT being “able to account for 70% of the variance...in usage intention – a substantial improvement over any of the original 8 models and their extensions” (Venkatesh et al., 2003:467), the model was only tested on four US organisations of limited size and context. Likewise, in this research, the researcher conducted the study in Jeddah University in Saudi Arabia with a limited sample, a limitation that is discussed in the Methodology chapter. However, other researchers, such as Carlsson et al. (2006), successfully tested the unified model in relation to the adoption of handheld devices.

It was important for the researcher in this study to verify the perceptions (views and attitudes) of users towards these tools as well as asking questions regarding the usefulness and ease of use of these ICT tools. This may be key in helping to develop understanding of why some educators and lecturers reject the use of ICT tools in their lessons, which, in turn, constitutes their behaviours and attitudes in accepting or rejecting the use of these tools in their classrooms. All these factors are examined in this study due to their significance to the study’s objectives.

In summary, from the above analysis of the development of the UTAUT model and other technology models and theories, UTAUT provides a robust model that is successfully applied in a wide range of settings and educational fields and helps develop understanding of using ICT and lecturers' behaviours and attitudes. The last model, UTAUT, is applicable to the study context because it could be used to explore both internal and external factors that lecturers face when using ICT in their teaching and lecturers' beliefs and attitudes related to using ICT in the Saudi setting.

In this study, the context is important, as lecturers do not have individual control in making decisions but rather are subject to heavy constraints. In light of this thesis discussion, the current research also incorporated the TPACK framework, which concentrates on the pedagogical use of ICT.

4.4.3 Technological pedagogical content knowledge (TPACK) framework (2006)

Lecturers must have a good understanding of how ICT can be combined with subject content knowledge and their teaching strategies to achieve effective learning. Therefore, finding a framework that can explain lecturers' skills and knowledge regarding ICT integration was critical to this study. The TPACK framework identifies the types of knowledge that lecturers need when adopting and using technology in their teaching. According to Mishra and Koehler (2006), who first proposed the framework, TPACK is the result of interaction between three bodies of knowledge: 1) knowledge of pedagogy, 2) knowledge of subject content, and 3) knowledge of technology (Figure 4.3).

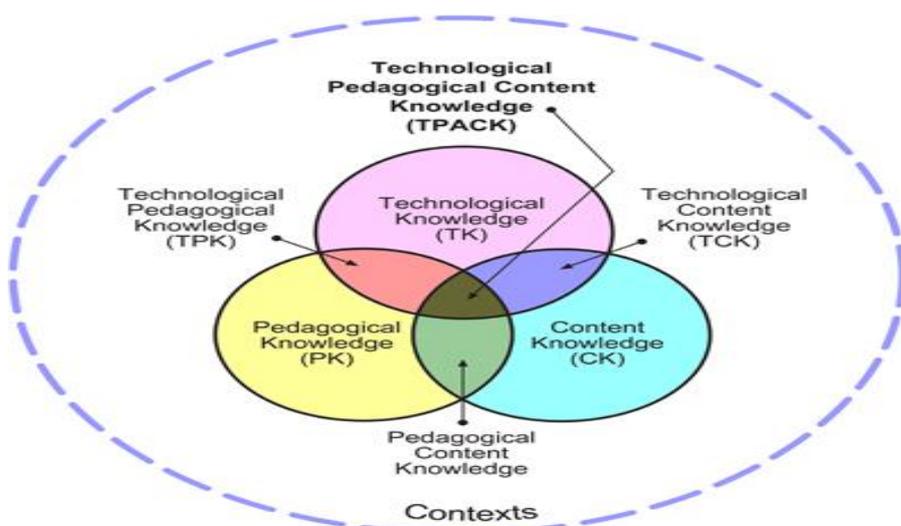


Figure 4.3: Technology pedagogical content knowledge framework (Koehler & Mishra, 2009; <http://tpack.org>).

To integrate ICT into teaching effectively, lecturers must understand how pedagogy, content, and technology can cooperate with each other to construct efficient discipline-based teaching with ICT (Groth et al., 2009). Therefore, there is a need to further investigate lecturers' knowledge concerning the TPACK framework to understand how it can help them successfully integrate ICT into their classroom teaching. The TPACK framework provides a way of thinking about successful ICT implementation, particularly the knowledge required to integrate ICT effectively into the classroom.

The TPACK framework has been studied extensively for explaining and describing lecturers' skills and knowledge associated with ICT implementation (Koehler et al., 2004; Koehler & Mishra, 2006, 2009). Mishra and Koehler (2006) emphasised that increasing the availability of technology in the classroom does not guarantee that lecturers can effectively integrate ICT into their teaching. Therefore, the TPACK framework may help lecturers understand how to integrate technology into their classroom (Karaca, 2015). The TPACK framework is a viable model for the knowledge base that supports technology integration into classroom learning environments (Abbitt, 2011). Ertmer and Ottenbreit-Leftwich (2010) asserted that knowledge, beliefs, pedagogical beliefs, and cultural contexts are among the factors that influence technology integration.

In spite of its frequent use, however, the TPACK framework has been widely criticised due to the lack of evidence explaining how it can contribute to the effective implementation of ICT. Recent decades have witnessed an increasing number of novel pieces of research related to the attainment of ICT proficiency and its integration into wider systems of practice, knowledge and awareness (Angeli & Valanides, 2009). However, the TPACK framework may have value for the present study of Jeddah University lecturers and their adoption of ICT in supporting students' learning and communication. For example, in this study, the researcher asked about the pedagogical approaches (e.g., group learning, collaborative learning and lectures) that lecturers might employ in classrooms to enhance their students' communication, as well as the ICT tools used in their teaching, such as PowerPoint, Twitter and blogs, and VLEs, such as Blackboard, Edmodo and Acadox. The TPACK framework was expected to help in understanding lecturers' knowledge and skills and how they transfer these into their practice. The TPACK framework has not been used for specific subject matter, for example, practical studies; thus, this study's findings would make a significant contribution to the existing body of knowledge, particularly in Saudi Arabia.

4.4.4 Selection of models related to this study

In relation to this study, Jeddah University is utilising an increasing number of pedagogical strategies that incorporate ICT, with significant development of information technology in recent decades. The integration of ICT in higher education opens new doors for many possibilities in teaching practice to support student learning and communication. However, whether new ICT tools can be successfully introduced in classrooms also depends on lecturers' attitudes towards these tools, as lecturers in general have the autonomy to choose the ICT that fits their pedagogical needs. There are many studies that have pointed to the importance of lecturers' attitudes in determining ICT use in their teaching practice (Hew & Brush, 2007; Jimoyiannis & Komis, 2007; Buabeng-Andoh, 2012a; John, 2015; Eickelmann & Vennemann, 2017), as discussed in Section 4.3.1.3. Therefore, in order to integrate ICT in Jeddah University, it is important to understand lecturers' acceptance of ICT and investigate factors essential to it. In this study, it was important to understand the main factors that influence the core components of UTAUT, such as effort expectancy, performance expectancy, social influence, and facilitating conditions. In particular, the study investigated the issues around lecturers' use of ICT to support student learning and communication. As well as incorporating TPACK concepts, the study attempted to investigate lecturers' knowledge and skills in relation to the major components of TAM and UTAUT. The use of UTAUT and TPACK offers a better picture of the issues that lecturers might face in their acceptance of ICT in a university setting.

In this section, the theoretical frameworks guiding the use of ICT are examined. This suggests that lecturers seek to encourage using ICT in their teaching through developing university policy frameworks that meet their expectations. Universities could meet these expectations by providing compatible resources, such as hardware, software, support system, and training. This research, therefore, must be encouraged creation of a positive relationship between institutional conditions and lecturers' use of ICT, noting that there is a need to address issues related to actual use of ICT in teaching and learning and student learning objectives, particularly when considering which one should be emphasised. Questions such as 'What barriers hinder the use of ICT by lecturers in Jeddah university?' should be explored, as well as whether 'having a lower number of ICT technicians will affect the effective use of ICT

in teaching and learning’, ‘Effective use of ICT can be affected by lack of ICT materials or their maintenance’.

In this research, it was vital to understand the beliefs of lecturers, since these can determine if or whether they might accept changes, such as introducing ICT into classrooms. Such factors were considered when interviewing lecturers about the use of technology when investigating Jeddah University lecturers’ beliefs regarding the issue of ICT technology, guided by inquiries such as the following: ‘What are the main issues around lecturers’ use of ICT to support students’ learning and communication?’

4.5 Summary

This chapter was concerned with factors that might influence the effective use and integration of ICT in teaching and learning to support students’ communication. In order to shed light on lecturers’ use of ICT, studies were discussed that examined empirical data on the issues raised in this chapter. A common conclusion of these studies was that lecturers’ ICT use and integration is dependent on a wide array of factors, which interact in complex ways. These factors range from lecturers’ demographic characteristics to external factors related to ICT itself. A number of models and theories of ICT acceptance and use were introduced and the selection of TAM, UTAUT and TPACK to guide this research was explained.

The next chapter moves to the empirical research process followed in this study and describes the methodology employed for gathering data for analysis of the lecturers’ views around issues of the use of ICT to support students’ learning and communication in higher education in Saudi Arabia.

CHAPTER FIVE

PHILOSOPHICAL FOUNDATION

5.1 Introduction

This chapter marks the transition from discussing the relevant literature and the theoretical framework in Chapters Three and Four to explaining the theoretical and practical perspectives of the study. This research investigates lecturers' views on the issues around their reported practice when using ICT to support students' learning and communication. The previous literature review chapters explored the diverse issues involved with implementing ICT at Jeddah University. This chapter presents the methodology employed in this study and discusses the procedures followed to answer the research questions.

The main research question

What are the main issues around lecturers' use of ICT to support students' learning and communication?

Sub-Research Questions

- 1) What are lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?
- 2) To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?
- 3) Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

5.2 Research Paradigm, Philosophy and the Researcher's Position

The term 'paradigm' is used to describe a researcher's 'worldview' in educational research (Mackenzie & Knipe, 2006). Guba and Lincoln (1994) defined a paradigm as a basic set of assumptions, worldviews or beliefs that inform an investigation or research action. Furthermore, Denzin and Lincoln (2000) defined a paradigm as a form of human construction that ultimately shows the researcher's position or addresses first principles with respect to the study to construct meaning from the data.

Mackenzie and Knipe (2006) argued that a paradigm is composed of three core elements: the assumptions driving the nature of knowledge, criteria for validity, and methodology. According to Creswell (2014) and Neuman (2007), a paradigm can be understood as a research methodology, or ontology or epistemology. Mackenzie and Knipe (2006) classified various theoretical paradigms as interpretivist, positivist (post-positivist), constructivist, transformative, critical, emancipatory, critical, constructivist, pragmatist and post-positivist.

Together, the above studies provide important insights into paradigms, which are significant because they guide researchers in determining what should be studied, how it should be studied and how the study's results should be understood. A suitable paradigm for the current study is a pragmatic approach, which is widely used in the social sciences and uses quantitative and qualitative research methods to understand the phenomena being researched due to the different epistemologies underlying the two methods (Wiersma, 1995).

5.2.1 Adopted paradigm

According to Creswell (2014), several paradigm types exist; however, an explanation of them all and their associated terms falls beyond the scope of this research. It is helpful, however, to discuss the philosophical and methodological approaches that the study adopted in order to illustrate their importance to the research.

Pragmatic researchers, such as Rossman and Wilson (1985) and Creswell (2014), found that significant results appear when the researcher combines both quantitative and qualitative methods. Rossman and Wilson (1985) suggested that a pragmatic worldview emphasises research problems, instead of the methods, and supports the application of any method that assists in gaining insight into a problem. Greene et al. (1989) and Creswell (2008) identified numerous rationales for mixing both data forms in a single piece of research, arguing that questions are best addressed through combining quantitative and qualitative methods and viewpoints.

The current researcher maintained a pragmatic approach in order to achieve a coherent and justifiable explanation of the factors considered in this study. The researcher also chose a pragmatic approach as a suitable paradigm because it enabled the application of various approaches to data collection and analysis. The results are also explained in a suitable research context so that realistic recommendations and conclusions can be drawn for research, practices and future studies.

The second rationale for adopting a pragmatic worldview was that pragmatism also opens the door to multiple methods and to different assumptions and views (Creswell, 2008). Indeed, “Pragmatism provides us with a different way to think about the objects of our knowledge” (Biesta & Burbules, 2003:108). The third reason for adopting a pragmatic worldview was to gain a justified and clear explanation of the issues under consideration in this research. The fourth reason for adopting a pragmatic worldview was that it allowed the researcher to move between quantitative and qualitative methods and data and to utilise induction and deduction. Plowright (2011) adopted a broader perspective, arguing that pragmatic philosophy does not limit the researcher to using only one method.

As referred to above, when a pragmatic approach is utilised in research, both quantitative and qualitative research approaches are used to collect data or investigate a complex natural or social phenomenon (Creswell, 2008). Pragmatism also uses findings in a positive manner to recognise the value of a system and allows areas to be studied that are of interest, by embracing different methods (Creswell, 2008).

Furthermore, Creswell (2008) confirmed that a pragmatic research provides a foundation for exploring a problem more effectively than using one method or approach in a piece of research. The pragmatic approach is deemed to be a more effective process for answering ‘what’, ‘why’ and ‘how’ research questions. Finally, the pragmatic approach adopted in this thesis allowed the researcher to employ strategies in empirical research aimed at investigating the issues around lecturers’ use of ICT to support students’ learning and communication, as well as the lecturers’ pedagogical beliefs and how these might influence their practice, including the factors that might influence lecturers to use ICT in supporting students’ communication at Jeddah University. Pragmatism is also an inclusive and complementary approach that researchers can adopt when they select methods for conducting their research.

5.2.2 Philosophical assumptions underlying the methodology

Lincoln et al. (2011) determined four philosophical assumptions essential for a study: ontology, epistemology, methodology and axiology. This section addresses the philosophical foundations that guided the collection and interpretation of relevant data in this study in order to answer the research questions identified above. These foundations consist of the fundamental values, norms, assumptions and beliefs held by each paradigm. The philosophical assumptions are outlined briefly below and it is shown how they guided this study’s research process.

Ontology

Ontology focuses on the nature of reality (Guba, 1990). According to Smith (2003), ontology is the branch of philosophy that focuses on a structure's actions, procedures, objects, relations and possessions that are essential for a specific thesis and area of reality. It concerns researchers' assumptions about what is real and how things work (Scotland, 2012), specifically, whether reality is fixed and objective or constructed from people's perceptions and experiences. According to Bryman (2016), there are two ontological positions concerning social research: objectivism and constructionism. Objectivism is the researcher's awareness of the external objective of the reality of a research question in the social reality. Constructionism, by contrast, assumes that social entities are concerned with the perceptions and actions of social actors (Dieronitou, 2014). The difference between the two has been shown to be related to how "cultures can be viewed as repositories of widely shared values and customs into which people are socialised so that they can function as good citizens or as full participants" (Bryman, 2008:18). Culture constrains people's thoughts and actions according to beliefs, customs and values that are internalised in order to socialise individuals and make them interactive members within society.

In this case, the researcher's objective position was to consider the lecturers' reality and their ICT use in the cultural context of Jeddah University in Saudi Arabia. Making informed decisions and recommendations to policy makers and the university is the result of this reality. Unlike the physical sciences, which are tangible and easier to study, researchers in social sciences must deal with human beings and their relationships and human action is unpredictable, as are the concepts and ideas those actions produce (Thomas, 2017). To reflect their ontological position, the researcher inquired about the lecturers' pedagogical practices when using ICT in the Saudi context. The researcher used mixed methods to gain a deep understanding of the main issues around lecturers' use of ICT to support students' learning and communication. It was the social reality, such as the lecturers' practice, that had to be understood, as these social realities are not things in themselves.

The study of ICT adoption from the lecturers' view, as was the case in this study, concerns the issues lecturers face when using ICT to support students' learning and communication. From the viewpoint of constructionism, researchers see culture as not fixed but continuously constructed, reconstructed, created and shaped by people's actions.

Epistemology

Epistemology is “how we know what we know” (Crotty, 1998:8). Blaikie (1993) explained epistemology as a theory about knowledge. A theory can be described as a set of claims or assumptions regarding a possible method for acquiring knowledge of reality. Researchers focus on the existing knowledge, the knowledge they already have and the manner in which they can describe that knowledge. Epistemology concerns the distance between the researcher and the participants, as well as the relationships that exist between them, and the implications of these for results validity credibility. The assumption of interpretivist epistemology is that truth or knowledge comes from the interaction of the researcher with realities; however, the presumption of objectivist epistemology is that an implication of reality already exists (Scotland, 2012). In terms of their epistemological position, pragmatists can take varied stances: “At some points the knower and known must be interactive, while at others, one may more easily stand apart from what one is studying” (Tashakkori & Teddlie, 2008:26). Researchers’ differing ontological and epistemological positions lead to different approaches towards the same phenomenon; therefore, in this research, consistent with her pragmatist view, the researcher read many different sources in the field and collected both quantitative and qualitative data from the participants. The researcher’s objective view focused on the issues lecturers face when using ICT to support students’ learning and communication and lecturers’ pedagogical beliefs, as well as the factors that might influence lecturers’ use of ICT to support students’ communication. Spending time at Jeddah University, and with the lecturers, also gave the researcher insider status. The researcher’s epistemological position enabled the building of relationships with the participants to create trust and understanding (Tashakkori & Teddlie, 2010). The advantage of having objective and subjective data is that it enables the researcher to answer the ‘how’ and ‘what’ elements of a research question (Creswell, 2014). According to Creswell (2014), the researcher cannot be purely subjective or objective; the researcher must state that he/she is a member of a group. Thus, the questions the researcher asked in this study included: What are the lecturers’ pedagogical beliefs regarding the use of ICT to support students’ learning and communication? (Epistemology) and Which demographic characteristics or other factors do lecturers view as influencing their use of ICT to support students’ learning and communication? Here, knowledge refers to the different worldviews of the participants obtained through using closed-ended measures and open-ended interviews.

In this study, the researcher acquired knowledge by reviewing the work of many previous pieces of research in the same research area and by collecting information from various authors in the field. According to Cohen et al. (2011), the acquisition of acceptable knowledge depends on the research questions and, to obtain credible data, the researcher should observe the phenomena concerned. However, the researcher must also aim to understand the participants' views about a phenomenon. The researcher must collect data that are relevant to his/her research questions and be practical in the collection approach. In this case, knowledge refers to the various participants' world perspectives acquired through closed-ended questionnaires and open-ended interviews. Furthermore, the researcher's belief is that while some truths may be correct today, they may be wrong tomorrow.

This study examines the main issues around lecturers' use of ICT to support students' communication. There is a conflict in this respect between uses underpinned behaviourism and constructivism. This study concerns the following:

PHILOSOPHICAL PERSPECTIVE (designed by the researcher of this study)

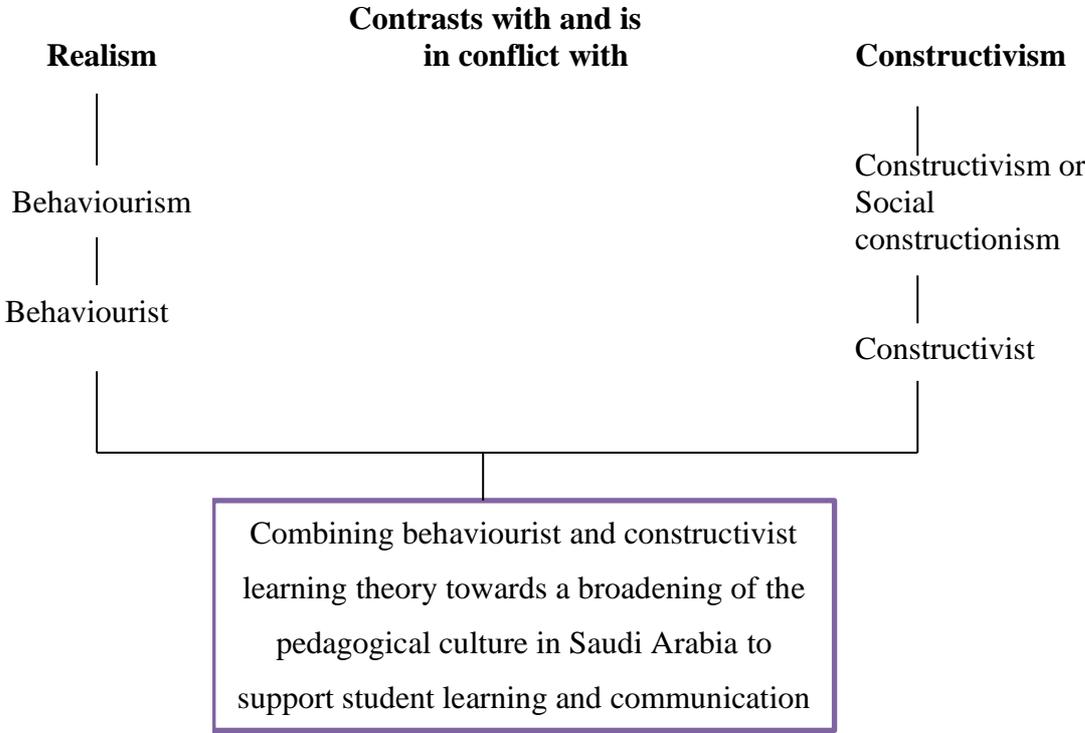


Figure5.1: Philosophical perspective.

This study uses the behaviourist and constructivist paradigms, for understanding learning. The concept of behaviourism versus constructivism holds many prospects. The behaviourist view asserts that learners learn through positive or negative behaviours, while, the constructivist view asserts that learning is to support students understanding and constitutes more of a discovery. However, the issue is not of which theory is the best, but how we can support students' learning and communication. In this respect, both theories have useful insight to contribute.

This paradigm argues that the participants' view in the world of human experience is privileged (Cohen et al., 2011). "Relativism is the view that reality is subjective and differs from person to person" (Guba & Lincoln, 1994:110) and Cohen et al. (2007:7) maintained, "Realism is the view that objects have an existence independent of the knower". The aim of research is to capture "the subjective meaning of social action" (Bryman, 2008:13). The interpretive paradigm stresses the existence of a number of factors affecting how things are in the social world. For example, interpretivist studies often set out to explore the characteristics of individuals, behaviours, opinions and attitudes with the intention of understanding them from within (Cohen et al., 2011). Behaviourism is a theory that provides a way of understanding didactic teaching (Jonassen, 1985). According to Jonassen (1991), realism could be mirrored and signified through learning and knowing processes that are supported by the 'objectivism paradigm' (p.5). In behaviourism the truth resides outside the knowers and knowledge is fixed and independent of the knowers. "The philosophical assumptions of objectivism are then contrasted with constructivism, which holds that knowing is a process of actively interpreting and constructing individual knowledge representations" (Jonassen, 1991:5).

The present study investigated the use of ICT in supporting students' learning and communication but did so from the lecturers' point of view. In this way, the researcher and participating lecturers were able to enter into the research framework and collaborate in sharing professional ideas. The theoretical framework provided a lens through which could be seen the disconnect between lecturers' views and what they claimed to do, allowing the researcher to understand how their views conflicted over the use of ICT in their teaching to support student communication. Constructivism is a philosophical theory that attempts to understand how people construct their knowledge in the real world. Combining behaviourist and constructivist learning theory was suitable for this study of whether lecturers integrated or used ICT

or employed different pedagogical practices and ICT in their teaching. However, the integration of ICT may be influenced by lecturers' attitudes and the integration or rejection of the use of ICT might be influenced by other people, such as the head of the university or those at the Ministry of Higher Education, or related to social influence, as discussed in Chapter Four on the factors that might influence lecturers to adopt and accept integrating ICT in their teaching to support student learning and communication. In the current study, this type of knowledge involves understanding lecturers' experience to understand the complexity of the lecturers' knowledge and skills and their use of ICT in their teaching.

Methodology

Methodology is a broad term that refers to the research approaches, procedure, design, methods and approaches utilised in studies (Keeves, 1997; Creswell, 2014). It could be defined as the action plan, design, process or strategy influencing the selection of specific techniques and forming a connection between the choice and application of the strategies used and the outcomes. For instance, Creswell (2014) explained that participants, data gathering, data analysis and instruments are all components of the methodology field, and Keeves (1997) noted that the research methodology selected depends on the researcher's decisions in the research process. The true representation of data depends on the manner in which they are collected and analysed. Quantitative and qualitative techniques have been associated with positivist and constructivist approaches, respectively.

Therefore, upon considering all the evidence, methodology explains how a research project is done and how to understand and know the research problem, the limitations faced and how those limitations were minimised. Finally, methodology is concerned with how knowledge is gained about the world or how knowledge is part of the world.

Axiology

Axiology deals with the values related to the research assumptions and is concerned with the ethical issues of research. Quantitative research claims to be value-free and unprejudiced, whereas qualitative research is characterised as being value-laden and biased (Creswell, 2014). It is important to recognise the key values and implications that can be drawn from these research approaches regarding particular issues in particular contexts (Hammersley, 2015). In the process of a qualitative approach,

inquirers and participants bring their own values to the research. Thus, information that is gathered from the field is also value-laden. The researcher discusses the ethical considerations of this research later in Chapter Six (Section 6.4) and Chapter Seven (Section 7.4).

5.2.3 Researcher's positionality

Positionality is a term that describes a researcher's worldview and the position the researcher adopts in relation to a research topic (Savin-Baden & Major, 2013). It indicates the relationship between the research instrument (the researcher), the participants, and the research subject (Bourke, 2014). In the social sciences and the education field, the researcher is expected to play a major role because a good researcher should always be able to find new knowledge and innovation in any theme (Wellington et al., 2005). However, researchers are capable of functioning in different roles and have to decide how each of these roles is played (Stake, 1995). Temple and Young (2004) further clarified that positionality can affect the research results and interpretations because "one's position within the social world influences the way in which you see it" (p. 164).

An important aspect of this research is the intention to use the outcomes to influence the Ministry of Higher Education in Saudi Arabia to encourage lecturers to use ICT to support students' learning and communication in universities. It is assumed that using ICT in education will support learning, but the researcher needs a better understanding of lecturers' views regarding the use of ICT to support students' learning and communication, their pedagogical beliefs and how these might influence their practice.

The position assumed by the researcher, whether as an outsider or insider, affects the research process (Bourke, 2014). The word 'insider' refers to when the researcher is or was part of the system or organisation in which the research is conducted (Brannick & Coghlan, 2007).

In the context of this study, the researcher could be considered an insider since she worked at Jeddah University. There are many advantages to being an insider, the main one being that the researcher understands and shares the participants' culture. As an insider, the researcher used her eyes and ears to see and hear the participants' views as she collected her data; the researcher was also a member of staff at Jeddah University. However, when researchers are insiders, they must be aware of the impact of bias on data collection and analysis in relation to the ethical aspect of anonymity (Unluer, 2012). Furthermore, Mercer (2007) suggested that researchers must never

announce their opinion about the research topic and should enable the participants to contribute their own stories during interviews.

According to Young (2004), the researcher cannot gain the trust and confidence of participants if he/she does not share some features with them, such as gender, race or class. In this research, being a woman who interviewed women was a vital factor, particularly in the Saudi context. The researcher hoped to be able to gain the participants' trust because she shares some features with them, i.e., gender, race and class.

Philosophical assumptions, beliefs and preconceptions might also affect a researcher's positionality. Data from several studies suggest that the goal and objectives of a study depend on having a suitable methodology in place (Heyvaert et al., 2011; ACET Inc., 2013). In this case, the researcher had to be flexible in the way she used mixed methods to analyse the data and to accumulate enough sound evidence. At the end of the research, the researcher intends to make the research accessible to policy makers so that they can acquire greater understanding of the situation.

As previously stated, the researcher used a mixed-methods approach. This is one type of pragmatism and the researcher considered various perspectives, viewpoints and positions (Johnson et al., 2007) and deemed the use of mixed methods to be the most effective way of addressing and answering the research questions (Cohen et al., 2011; Creswell & Plano Clark, 2017). The researcher conducted all 16 of the interviews with female lecturers herself. Since the researcher had experience in the area of university teaching with ICT, there was a possibility of bias in the research, which may have influenced the manner in which the researcher understood, interpreted and applied the lecturers' perspectives from the data, collected. Thus, it was important for the researcher to ensure that the lecturers' contributions would be as objective as possible so that the validity of the research was not jeopardised. Such precautions minimise the possibility of bias and ensure that the study's assumptions and limitations do not affect the interpretation of the results. Through clarifying the professional and personal Saudi context, and the different perspectives in relation to the research, the objective is to offer the reader the opportunity to understand the research as fully as possible. Clarifying the context also gives the researcher a chance to eliminate potential biases that may influence the development of the research.

In this study, the researcher combined deductive and inductive approaches (Edmonds & Kennedy, 2013), which is consistent with adopting the pragmatic paradigm (Creswell & Plano Clark, 2011). Both deductive and inductive strategies

constitute the basis for this study's reasoning (Reichertz, 2014), as they are the forms of "logical reasoning that are used in every type of research" (Reichertz, 2014:123). According to Reichertz (2014:130), "deduction begins with a valid law and asserts that something will behave in a certain way. Induction observes individual parts of the unique diversity of the world and attempts to determine rules and laws to order its infinite manifestation". Thus, inductive strategies start with collecting data in order to form a theory (Dawson, 2007).

The interviews were arranged in semi-structured stages, and the researcher provided prompts and probes as needed during each session. Another responsibility was performing data analysis and the researcher created strong descriptions that would help readers understand the new research findings. Using evidence from the data, the researcher sought to provide readers with detailed descriptions of the research setting, painting an accurate picture of the findings and their documentation. Direct quotations from documents and some participant interviews are used as evidence in the researcher's discussion of the results in Chapters Eight, Nine and Ten.

According to Guba and Lincoln (1994), researchers should involve themselves in the research process by acting as a contributor and a helper. Thus, in this research, the researcher's interactions with lecturers were intended to lead to knowledge about the lecturers' views on using ICT to support students' learning and communication and understanding the lecturers' pedagogical beliefs and how they might influence their practice, as well as the factors that might influence lecturers' view towards using ICT. Thus, the outcomes of this study are a direct result of researcher-participant interaction. Furthermore, Mason and Bramble (1997) stated that, to construct the truth, the researcher should directly interact with the contributors as the main data collector. This approach reinforces the researcher's position as a pragmatist who believes that knowledge can be co-constructed by the researcher and the participants. However, the researcher must adopt a reflexive position to ensure that the interactions with participants do not undermine the rigour and quality of the research. The researcher is particularly interested in the study subject and reflexivity ensures that the knowledge is co-constructed, rather than dominated by the researcher's interest.

5.3 Research Design

Research design is one of the most important stages that lead to successful research implementation. A sequential mixed-methods design was adopted in this research to answer the research questions. Tashakkori and Teddlie (2008) maintained that

quantitative and qualitative methods are both essential and that the research questions determine which of the methods, quantitative or qualitative, is used.

In mixed-methods research, a researcher might adopt a qualitative research method at some point in the study or a quantitative approach at another (Leech & Onwuegbuzie, 2009; Creswell & Plano Clark, 2017). In this study's adopted sequential mixed-methods research design, the first stage was quantitative and the second stage involved the collection of qualitative data. There are various reasons for using mixed methods. The advantages for the current research are many and include the following. 1) The ability to understand lecturers' beliefs, acceptance and attitudes towards the use of ICT in their teaching, especially in promoting social interactions, which will enhance the validity and reliability of the study findings as opposed to utilising only one approach. 2) A mixed-methods approach also adds value to a study by enhancing nuance, clarity, and accuracy (Greene et al., 1989). 3) The use of a mixed-methods approach also ensures that rich data are collected, which, in turn, enhances the interpretations of the collected data to a greater extent than would a single-method approach (Leech & Onwuegbuzie, 2009). 4) This method allows for the creation of a broader picture and understanding of the phenomenon under investigation (Creswell, 2008).

However, there are challenges in using a sequential mixed-methods design. A challenge is that mixed-methods research requires extra time, due to the need to collect and analyse two different types of data (Creswell, 2008). Furthermore, mixed-methods research demands specialist expertise in various techniques, making it costly (Salehi & Golafshani, 2010). Therefore, most scholars recommend further investigation into mixed-methods integration in research (Greene et al., 1989; Johnson & Onwuegbuzie, 2004). For instance, the lack of consistency in researchers' perspectives concerning mixed-methods study may result in misunderstandings regarding this new approach (Salehi & Golafshani, 2010).

As stated above, in this study, the researcher used a sequential mixed-methods design, which involved collecting quantitative (questionnaire) and qualitative (interview) data to capture lecturers' views and perceptions. The first stage was quantitative (questionnaire) to gain an overview of the lecturers' views, pedagogical beliefs and attitudes about using ICT at Jeddah University. The second stage concerned qualitative data (interview) to gain a deeper understanding of the lecturers' views and perceptions in order to undertake a coherent assessment of the lecturers' pedagogical beliefs and attitudes regarding using ICT and the factors that enable them

to integrate ICT to support student learning and communication (see Figure 5.2). This was deemed the most appropriate way to deal with the research questions. Nonetheless, the qualitative approach was the main research method employed, because the use of ICT in Jeddah University is quite recent and lecturers' attitudes towards using it have not been investigated. Therefore, a quantitative method was used to gain an overview of the lecturers and a large representative sample, which would enable generalisation to the Jeddah University lecturer population; whereas qualitative research was used to investigate and identify emerging themes regarding the issues around lecturers' use of ICT to support student learning and communication and to confirm the findings.

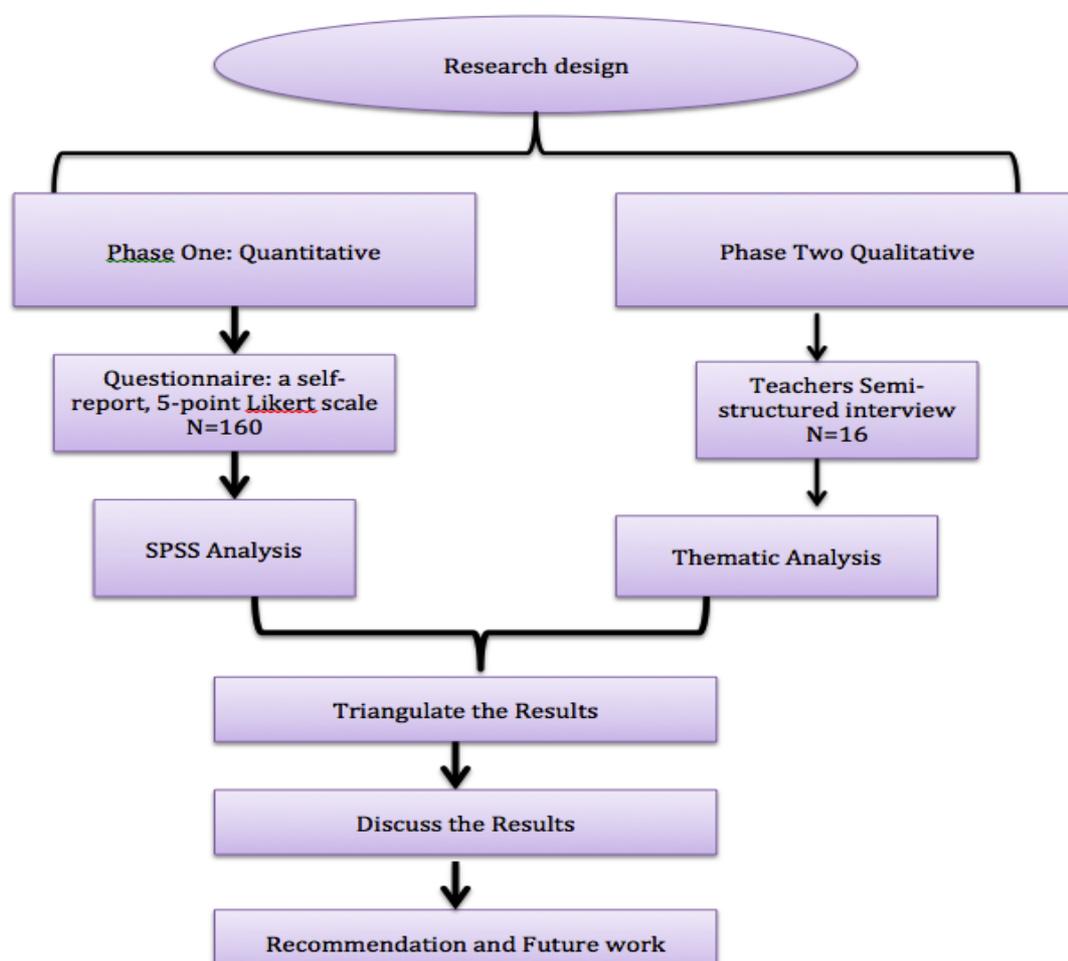


Figure 5.2: Research design

5.4 Research Strategy

Singh (2007:188) defined research strategy as “a generalised plan for a problem which includes structure, desired solution in terms of objectives of research and an outline of planned devices necessary to implement the strategy”. The strategy for the current

study was to use instrumental case study as a research approach. The following sections address the different aspects of using a case study approach in more detail and the final section addresses the justifications behind its selection.

5.4.1 Instrumental Case Study

The type of case study used in this research is the instrumental case study, which is one of the types of case study addressed by Stake (1995) in his book, *The Art of Case Study Research*. An instrumental case study serves to help understand phenomena and relationships within it. Numerous factors affect the selection of a case study design over other approaches. For this study, a thorough evaluation was performed of the advantages of employing a case study to determine the pedagogical beliefs of lecturers and their use of ICT in teaching at Jeddah University. The case study approach is the most utilised method in several fields, including education, social sciences, economics and psychology (Gillham, 2000). Gillham (2000) described the case study approach as the most suitable method when investigating individuals or groups of people, such as a family or a class, in an institution such as a factory, town or school, a profession or a community. For example, Yin (2002) defines a case as “a contemporary phenomenon within its real-life context, especially when the boundaries between a phenomenon and context are not clear and the researcher has little control over the phenomenon and context” (p. 13).

The current study used an instrumental case study approach as the case provides insights into a social issue using theoretical propositions to support the issue (Stake, 1995). The fundamental tenet of a case study is to provide an in-depth investigation of a particular issue using multiple data collection instruments for duration of time Stake (1995). The approach may involve an institution, a community, a group, or an individual or it could constitute many cases. In this view, a case study approach starts with the collection and analysis of data to understand the context and not with a priori theoretical assumption. As such, it helps readers to understand issues more clearly because it illustrates individuals in real situations (Gillham, 2000).

An explanatory interpretive case study was used in this study as a methodological framework. The purpose of this study was to find answers to specific research questions in order to develop evidence supporting certain theoretical frameworks and abstractions, particularly by gaining the best possible deductions. In this regard, a researcher’s goal may be to explain, describe, or explore theories and not to generate statistical generalisations (Ryan et al., 2002). Nonetheless, in an investigation such as this, a case study may aim at establishing how the findings of the

present study can support or corroborate the findings of similar studies in the same educational paradigm.

5.4.2 Justifications for the use of an instrumental case study

All researchers seek evidence and theory but their search takes different forms. A case study is helpful in order to understand and analyse a complex situation (Yin, 1994). This method has the distinctive advantage of authenticity and real-life context, which makes ideas more understandable than when expressed solely as abstract theories or principles. They help to show how concepts and theories connect, and how they think to practice (Cohen et al., 2011). They also enable the researchers to explore in depth the issue in focus and enables investigation of matters that are not measurable or tangible the aim is to analyse and understand a specific situation, rather than to produce generalised patterns (Cohen et al., 2011; Thomas, 2011).

Case studies can also establish cause and effect, by virtue of their observation of effects in real contexts, since context is a powerful factor in determining both causes and effects, and in-depth understanding is needed to understand a case fully (Cohen et al., 2011). According to Sturman (1999) and Cohen et al. (2011), the case study's distinctive characteristic is its ability to approach human factors as a whole, instead of as a loose connection of traits. The aim of a case study is always to show images of reality, describing in detail how participants experience the actual situation in a natural real-life context (Sturman, 1999; Cohen et al., 2011; Thomas, 2011).

For all the advantages of case studies described above, they are, in the social sciences, subject to a number of constraints. The first is that it is difficult to generalise from the results of a case study. Set against this is the notion that generalisability is not, in the view of Thomas (2011), always the main aim of research. Thomas (2011) describes the main need of research as the formation of analytical pictures of a situation and claims that case studies are responsible for the most insightful research. Case studies are also limited by the thick descriptions of data they produce, which can present handling difficulties (Cohen et al., 2011).

Case studies are driven by data, not theory, and data from small samples are a constraint on quantitative analysis (Gillham, 2000). Cohen et al. (2011) have commented on the journalistic style of some researchers, which, when focusing on cases that are more noteworthy or even have sensational aspects, presents an incomplete picture of the whole. There is also the suggestion that some researchers select what they want to report about a case. However, despite these limitations, the case study remains suitable and convenient when the aim is a deep exploration of a

phenomenon in context (Yin, 1994; Stake, 1995; Gillham, 2000; Bassey, 2001; Thomas, 2011). An instrumental case study is used here because the subject of the research is lecturers' views on using ICT to support students' learning and communication and its focus will be how and why?

5.5 Population and Sample

A population is defined as a collection of elements or cases involving individuals, events, organisations or units that have similar feature(s) and allow for generalising a conclusion (McMillan & Schumacher, 2010). Sampling is defined as the method of selecting a proportion (sample) of a whole group (the sampling population) that will be used for the data collection, analysis and deduction for predicting information (Tongco, 2007).

In this study, the researcher collected a sample from Jeddah University in Saudi Arabia. At present, there are two campuses—one for males and one for females—with approximately 353 lecturers who hold Master's and PhD degrees from reputable UK and USA universities and a total of more than 8,000 students of Saudi nationality (Jeddah University, 2014). The Jeddah University campuses are campus A (male) and campus B campus (female). The researcher sent her questionnaire to both campuses, because the two campuses are separated. The population and sample were selected based on the researcher's convenience, as the research was undertaken with time and financial constraints. The researcher sent an email to potential respondents, i.e., lecturers of first-year foundation students at Jeddah University, to request their participation in the study.

There are two main sampling techniques: probability and non-probability (Tongco, 2007; Cohen et al., 2011). There are five types of probability sampling—simple random, cluster, stratified, systematic and multistage—and two types of non-probability sampling—convenience and purposive (Teddlie & Yu, 2007; Thomas, 2017).

In this study, the researcher selected convenience and purposive samples. Tongco (2007) and McMillan & Schumacher (2010) stated that selecting respondents who are easy to access is called convenience sampling. The participants in this study were easy to access and were willing to participate in the study. "Purposive samples are the most commonly used form of non-probabilistic sampling" (Guest et al., 2006:59). As the researcher stated above, the research was not intended to be generalised as it was designed as a single case study. However, the use of purposive

sampling allowed the researcher to dig deeper to gain rich information during the investigation (Johnson & Christensen, 2008). The justification for using purposive sampling in this study was to gain more in-depth information about the use of ICT to support teaching and learning. Choosing a purposive sample was extremely important to generate a group that would address the research questions effectively. Thus, all the participants were full-time lecturers teaching foundation-year students at Jeddah University.

The sample size is the number of responding participants chosen to be part of a study (Kumar, 2019) and is a critical consideration during the research process (Cohen et al., 2011). When conducting mixed-methods research, the researcher must consider both the quantitative and qualitative stages of the study when determining the sample size. The sample size depends on whether the research chooses a quantitative, qualitative or mixed-methods approach, the purpose of the research and, finally, the level of accuracy required regarding the variables (Cohen et al., 2011). There are no straightforward answers to this problem. With regard to the quantitative phase of the study, there are no rules for the number of people providing questionnaire data; however, a large sample is more representative (Cohen et al., 2011) and a bigger response is more useful for data analysis, as when conducting statistical tests large samples are preferable (Kumar, 2019). In addition, in a small size sample (e.g., $N = 30$), the research results might have insufficient power (Johnson & Christensen, 2008). Therefore, the questionnaire sample size should be large enough to represent the population. However, in a qualitative sample, the general rule is that it should not be too small because that makes it difficult to obtain saturation (Johnson & Christensen, 2008), i.e the situation where no more data need be collected because no new information emerges from the data. At the same time the sample should not be too large as this makes it difficult to achieve an in-depth analysis (Johnson & Christensen, 2008). Similarly, Cohen et al. (2011) noted that a small sample in qualitative research is better for achieving deeper analysis.

In this study, the academic lecturer population was taken from Jeddah University (2014) where in campus A 150 males and in campus B 203 females, were the only ones teaching the foundation year. The lecturers taught computer information technology (IT), mathematics and general education, such as languages, social sciences and sciences. The sample size in this research study was 160 Saudi lecturers. For summary data about the lecturers who participated in this study, refer to the demographic information in Chapter Eight, in Section 8.2.

5.6 Summary

This chapter has provided a comprehensive consideration of the mixed methods used in this research. The chapter explored the philosophical foundation and the paradigm used in the research by identifying the ontology, epistemology, methodology and axiology of the research. Ontology is the starting point for understanding social research and the researcher illustrated the difference between objectivism and constructionism in the chapter. For instance, constructionist ontology allowed the researcher, as an interpreting social actor, to communicate with the research location, as well as with the respondents, for a full analysis of dialogic hermeneutic data. Epistemologically analysis was made by interacting with the lecturers as social actors and by understanding their experiences as they communicated with them. This revealed various understandings, views and practices in relation to the use of ICT to support teaching and learning. A description of the researcher's position and the significance of reflexivity were highlighted. The chapter also provided a comprehensive description of the sequential mixed methods design used in this research and the decision to use an instrumental case study strategy. It also provided details of the population and sample.

The next chapter explains the first stage of the data collection methods: the questionnaire.

CHAPTER SIX

DATA COLLECTION METHODS STAGE ONE: THE QUESTIONNAIRE

6.1 Introduction

The previous chapter set out the philosophical foundations of this study that led to the adoption of a sequential mixed-methods design. This chapter presents the design of the first stage of the research. The researcher's first stage involved the choice and development of a questionnaire as a data collection instrument, as well as consideration of the validity, reliability and ethical aspects of the questionnaire. The aim of using a questionnaire was to gain a wide overview of the lecturers' views, pedagogical belief, attitude as well as the barriers relating to the use of ICT to support students' learning and communication.

6.2 Stage One: The Questionnaire

As previously mentioned, the rationale for using a questionnaire in stage one was to assess the lecturers' views concerning the use of ICT to support students' learning and communication. This questionnaire was useful for reaching many of the lecturers at the university. The audience targeted was lecturers who teach foundation year at Jeddah University. It was impossible to conduct the research in all areas of the country because travelling throughout the vast area of approximately 830,000 square miles would have been difficult due to time and financial constraints. Jeddah University has two campuses with approximately 353 lecturers and 8,000 students. Furthermore, the university is familiar to the researcher, as she was a lecturer there. This familiarity facilitated access to the women's campus in the area, although the men's campus was difficult to access due to the cultural norms in Saudi Arabia, as discussed in Chapter Two in Section 2.4. The process of developing the questionnaire is further explained in Figure 6.1.

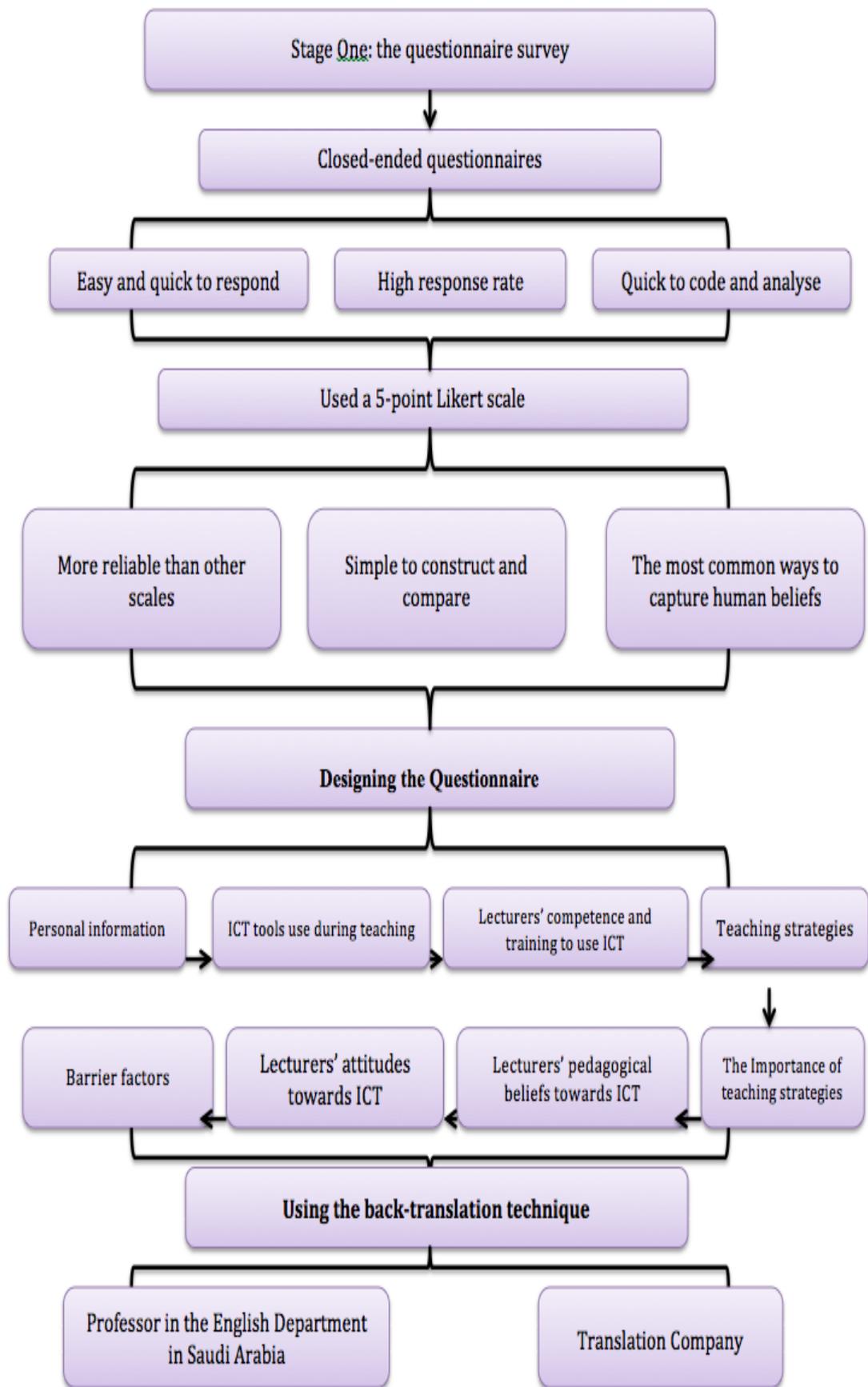


Figure 6.1: Process for developing the questionnaire.

Questionnaires are a widely known information-gathering tool and self-reporting method for collecting data and are typically completed at a distance from the researcher. The researcher designs the questionnaire with lists of questions to collect data that will answer the research questions (Cohen et al., 2011).

Bryman (2016:35) defined quantitative research as “a research strategy that emphasises quantification in the collection and analysis of data”. Thus, a questionnaire relies heavily on measuring something that happens in the social world. Payne and Payne (2004:180) stated:

“Quantitative methods (normally using deductive logic) seek regularities in human lives, by separating the social world into empirical components called variables, which can be represented numerically as frequencies or rates, whose associations with each other can be explored by statistical techniques, and accessed through researcher-introduced stimuli and systematic measurement”.

A closed-ended questionnaire can be employed to generate statistical data in quantitative research (Dawson, 2007). Questionnaire items can be formulated in various ways, such as open-ended and multiple-choice questions and ranking scales. From all these types, the researcher must choose the best match to answer the research questions (Cohen et al., 2011).

In this study, the researcher chose a closed-ended format to address the research questions. Closed-ended questions offer several advantages. First, the range of options provided generates response frequencies, which may prove useful for statistical analysis. Closed-ended questionnaires also tend to be easier for coding and recording responses (Dawson, 2007). Another advantage of using closed-ended questions is the established options are ready to code for analysis (Reja et al., 2003). However, despite all these advantages, there are some disadvantages to using closed-ended questionnaires; for example, they cannot give the researcher a sense of feeling and behaviour and they provide limited access to the respondents' in-depth experiences or facial expressions (Reja et al., 2003). Furthermore, although closed-ended questions are straightforward to answer, writing a good closed-ended question is extremely difficult and time consuming (Dawson, 2007). Closed-ended questions can also limit the respondent to answering using only the options provided (Reja et al., 2003; Cohen et al., 2011). Bryman (2016) suggested that mixed-methods studies minimise these limitations and achieve a deeper exploration of the respondents' beliefs and experiences. Another criticism levelled by Dawson (2007) is that using closed-

ended questionnaires sometimes means the participants do not answer all the questions or do not read the questions properly. Appropriate care in designing and distributing the questionnaire may mitigate the effects of these drawbacks. For the current study, the researcher decided that the advantages of closed-ended questions outweighed their disadvantages. Thus, in this study, the researcher used closed-ended questions to ensure they were easy and quick to answer, which would be more likely to yield a high response rate.

A questionnaire can be administered while the researcher is absent or present (Dawson, 2007). Cohen et al. (2011) asserted that although the researcher's presence may make some participants uncomfortable, it might also be helpful in ensuring a good response rate (Cohen et al., 2011). The researcher in this study was absent and relied on the university administration. This minimised the possible bias of researcher influence. The most common reason for using the university administration is to reach a large sample and to minimise financial constraints, such as those connected with arranging travel and meetings.

There are many types of questionnaire format and one that includes a neutral option may be required. One of the most common formats is the Likert scale (DeVellis, 2011). In a Likert scale, "the item is presented as a declarative sentence, followed by response options that indicate varying degrees of agreement with or endorsement of the statement" (DeVellis, 2011:93). The Likert scale is the most common and useful way to capture human beliefs, attitudes and challenges in research projects. Likert scales are also readily understandable to respondents and enable them to respond with their views (Cox & Isham, 1980). The main reason for using Likert scales in this study was that these are simple to construct, can be used in many cases and are more reliable than other scales (Kumar, 2019). The reliability of the Likert scale lies in having a wide range of answers to give to the respondents (Oppenheim, 1992).

There are four main types of Likert scale: 3-point, 4-point, 5-point and 7-point scales (Perera et al., 2008). Different levels of participant responses require different types of scales. According to the wording of the questionnaire items (see Appendix 8), a 5-point scale was considered enough to give an adequate range of answers regarding the lecturers' views on using ICT to support teaching and learning compared with other Likert scales. The participants were asked if they agreed or disagreed with survey statements using the following scale: 1 = strongly disagree, 2 = disagree, 3 = unsure, 4 = agree and 5 = strongly agree. The questions in this study questionnaire were

formulated to measure various factors, such as lecturers' pedagogical beliefs, attitudes, teaching strategies and activities, ICT tools and ICT barriers. The choice of 5-point scales specifically was because a 4-point scale has the disadvantage of not providing a neutral option, so respondents are forced to choose a positive or negative response that may not reflect any uncertainty or ambivalence they feel. While 3-point and 7-point scales overcome this limitation, the 3-point scale is less selective than the 5-point scale, as it offers fewer options, while 7-point scales can be difficult to answer, because of the fine distinctions needed.

6.2.1 Questionnaire design

The researcher began designing the questionnaire by revising the research questions and aims. The next step was to review the literature and look for the main area the researcher wanted to cover. The first draft of the questionnaire reflected the main points of the literature review that were relevant to answering the research questions, such as determining the lecturers' views of ICT to support teaching and learning, and then these were suggested in a set of statements.

All the questionnaire questions used a closed-ended format. Closed-ended questions are easy to answer and the participants can simply circle their answers. The results from the respondents' answers are easy to compare, quick to code and analyse, and are direct and to the point.

The researcher considered several aspects while designing the questionnaire, such as moving from point to point in a consistent and logical manner so that the respondents would comprehend the questions easily and validity and reliability would be more likely to be assured (Dawson, 2007; Cohen et al., 2011). When the researcher designed the questionnaire, she avoided double-barrelled questions, i.e., items asking about two things in one question, such as, *I believe the use of ICT has the potential to improve social interaction in the classroom and is beneficial for improving students' learning*, since there would be no opportunity to probe the respondents to clarify what they meant by a given response. It was also important to avoid leading, complex or irritating questions (Cohen et al., 2011). For example, while designing the questionnaire, the researcher avoided questions requiring a follow up or a change in response scale such as,

Do you use ICT in your teaching?

Yes ()

No ()

Followed by: If yes, how often do you use ICT in your teaching?

Always () Often () Sometimes () Rarely () Very rarely ()

Another point to be aware of when designing the questionnaire was avoiding double negatives, such as:

No, I do not like it

The researcher also kept in mind the length of the questionnaire and, therefore, only included questions directly related to the study (Bird, 2009). For example, the main research question is: What are the main issues around lecturers' use of ICT to support students' communication?

In summary, in this study, the researcher kept in mind that, to ensure that the results of the questionnaire were reliable and valid, she should not use difficult or ambiguous words, and the language had to be precise so that the questionnaire was easy to understand. Bird (2009) suggested that, to be reliable and valid, questionnaire questions should be short, simple and easy to understand, and should avoid using the word 'not' (e.g., Why not use ICT in your teaching?), since negatives can be confusing.

The lecturers' self-administered questionnaire consisted of eight sections. The first page of the questionnaire was a covering letter, which explained the purpose of the research and asked the participant to sign the informed consent form (see Appendix 5). To encourage responses, the consent form assured confidentiality and anonymity and provided a clear understanding of the study. The letter assured the confidentiality of information they provided and that the results would be reported for group analysis; no individuals would be identified. The covering letter also included instructions for the participants. For example, it informed the participants the questionnaire should be answered by just ticking the boxes from the options the researcher had provided. The researcher included a sheet at the end of the questionnaire with more detailed information about the study; these was done because if participants can see that a covering letter is too long, they may think the questionnaire is time consuming and not respond. Including information at the end of the questionnaire was important because if participants were interested in the study and wanted more information or wished to participate in the second stage, they could provide their contact details. The researcher's contact details were also provided in case participants had any questions

about the research and this was intended to increase the level of trust between the researcher and the participants.

The first part of the questionnaire generated personal information, while the second part gathered data regarding the lecturers' ICT use during teaching. The third part concerned the participants' competence and training to use ICT and the fourth part concerned teaching strategies. The fifth part focused on the importance of teaching strategies to support teaching and learning. The sixth part examined the lecturers' pedagogical beliefs towards ICT and the seventh part investigated the lecturers' attitudes towards ICT. The eighth and final part considered the barriers that lecturers face when using ICT to support teaching and learning.

Section one: Personal information

In this section, three questions were used to establish the age, academic background, qualifications, and experience of the target population. This was intended to provide understanding of the context from which the data were collected. Thus, the participants' demographic information provided a foundation for a clearer understanding of the data and the interpretation/analysis. The researcher believes the above information held significance because it served as an indicator of the context of the data collection setting. Thus, the data comprehension and analysis could be improved if the respondents' demographic information was known, as it may influence the lecturers' perceptions regarding the use of ICT to support teaching and learning.

Section two: ICT tools and application use during teaching

This section collected information regarding the ICT tools and applications used during teaching (Table 6.1).

Table 6.1: ICT tools and applications used during teaching

ICT tools and applications used during teaching	Yes	No	Unsure
Interactive whiteboard			
PowerPoint			
Projector/data show			
Virtual learning environments, such as Blackboard and Acdox			
Social media (blogs and Twitter)			
Other. Please state _____			

Section three: Lecturers' competence and training to use ICT

The lecturers were asked to rate their level of competence when using ICT (Table 6.2).

Table 6.2: Lecturers' competence and training to use ICT.

Competence and training to use ICT	Yes	No	Unsure
I have the knowledge and skills to use ICT.			
I have low experience of using ICT.			
I have training to use ICT.			
I have the technical support to use ICT.			

Section four: Teaching strategies

The lecturers were asked about the teaching strategies they used in their teaching and learning (Table 6.3).

Table 6.3: Teaching strategies

Teaching strategies	Yes	No	Unsure
Lecturing			
Large group discussion			
Paired activities			
Presentation			
Group projects			
Other. Please state _____			

Section five: The importance of teaching strategies

The lecturers were asked (Table 6.4): How do you rate the importance of using the following teaching strategies when teaching?

Table 6.4: Importance of teaching strategies

Teaching strategies	Very important	Important	Neutral	Slightly important	Not important
Lecturing					
Large group discussion					
Paired activities					
Presentation					

Group projects					
Other. Please state _____					

Section six: Lecturers' pedagogical beliefs towards ICT

This section presented items in the form of a 5-point Likert scale, which was designed to solicit information relating to the lecturers' beliefs and attitudes towards the use of ICT (Table 6.5).

Table 6.5: Lecturers' pedagogical beliefs towards ICT

Lecturers' pedagogical beliefs towards ICT	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
I believe that ICT is beneficial for improving students' learning.					
I believe ICT can sometimes be more effective than traditional classroom learning.					
I believe that it is beneficial to give students time to work together using ICT.					
I believe the use of ICT has the potential to improve social interaction in the classroom.					
I believe that ICT can help shift the balance from teacher-centred teaching approaches to student-centred teaching approaches.					
I believe that ICT can enhance lecturers' effectiveness.					

Section seven: Lecturers' attitudes towards ICT in their teaching and learning

The lecturers were asked to indicate the strength of their agreement with a number of items regarding their attitudes towards ICT use (Table 6.6).

Table 6.6: Lecturers' attitudes towards ICT

Lecturers' attitudes towards ICT	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
ICT is important to instructional practices.					
ICT is important for learning in the classroom.					
ICT has an important role to play in teaching and learning.					
Using ICT has the potential to improve students' learning in the classroom.					

Using ICT in learning increases the quality and the amount of students' interactions with each other.					
Using social media platforms, such as wikis, blogs and Twitter, is beneficial to the development of social interaction.					
Lack of knowledge and skills prevents me from using ICT.					

Section eight: Barrier factors

In the final part of the questionnaire, the questions were designed to collect information on factors affecting the lecturers' use of ICT. The lecturers were also required to show their agreement levels to the various items suggested in the questionnaire, especially in relation to the factors that prevented them from using ICT (Table 6.7).

Table 6.7: Barrier factors

Barriers	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Lack of clear policy for the use of ICT.					
No or slow Internet access.					
Lack of training.					
Lack of technical support.					
Lack of hardware and software in Arabic.					
Other. Please state _____					

The questionnaire ended by thanking the participant and providing further details about the study. Furthermore, any lecturers who agreed to participate in the second stage of the study could supply their name and contact information.

6.2.2 Translation of the questionnaire

Most of the participants in this study were speakers of Arabic. For this reason, the questions in the questionnaire, which were formulated in English, had to be translated into Arabic. This was done using the back-translation technique. Translation is conducted in four ways: transaction review, back translation by way of bilingual judges, translation review, and multiple-forward translation (Maxwell, 1996). In line with Brislin's (1970) suggestion, this study employed back translation because it is deemed the most suitable for cross-cultural translation. When conducting back

translation, the following process is undertaken: 1) translate the transcript into the language being targeted; 2) go through the transcript to check for grammar errors; 3) translate the transcript back from the target language into the original language, and counter-check if it gives the same meaning as the original transcript; and 4) ensure that a pre-test has been conducted before the actual use (Brislin, 1970).

After selecting back translation, the translation process began. First, the researcher worked with a translation company and an Arabic friend in the English Department in Jeddah university to ensure the meaning of the questionnaire was not distorted during the translation from English into Arabic, or vice versa. Then, the questionnaire transcript was sent by email to a professor in the English Department in Saudi Arabia, who was asked to check the grammar to ensure the validity of the questionnaire's translation. Finally, to ensure the validity of the questionnaire, the translation company back-translated it into the original language. The meanings of the English and Arabic versions were compared to ensure the translation made sense. In the final stage, the researcher piloted the questionnaire to ensure it was understandable and that its meaning would be clear for the participants in the main study.

6.2.3 Piloting the questionnaire

Wiersma (1995:468) defined a pilot study as follows:

“A study conducted prior to the major research study that in some way is a small-scale model of the major study: conducted for the purpose of gaining additional information by which the major study can be improved—for example, an exploratory use of the measurement instrument with a small group for the purpose of refining the instrument”.

Piloting a questionnaire is highly recommended to ensure that the items can be tested in terms of the questions' clarity and to improve the methods and procedures (Van Teijlingen & Hundley, 2001). In addition, piloting a questionnaire is important in order to obtain feedback from the participants about its validity and to determine how long the questionnaire takes to complete (Cohen et al., 2011). A pilot study identifies the problems the researcher may face during the research. Furthermore, the researcher is able to gather comments concerning the suitability of the questions for investigating the research problem (Cohen et al., 2011). Piloting data collection instruments also allows the researcher to test and revise the procedures and questions, as the researcher can gain a good idea about what methods are suitable for collecting the data. Using a pilot study also helps to pre-test the study, by reducing mistakes and simplifying

procedures during the research process. As De Vaus (1993:54) stated: “Do not take the risk, pilot test first”.

In this study, to validate the instrument and ensure useful content, the researcher asked to Saudi PhD students at Hull University and her supervisor at Jeddah University to read the questionnaire and provide comments and feedback. With regard to the questionnaire’s suitability, the participants were requested to add any comments regarding the clarity of the questions.

The pilot study in this research was conducted with Saudi postgraduate students at Hull University who worked in Saudi Arabia as lecturers, and were not part of the main study. The participants were selected based on their relevant knowledge, availability and willingness to participate. The participants were asked for suggestions about possible additional questions or those items that needed to be changed or removed. All the participants were provided with the Pilot Evaluation Test form (see Appendix 7) so that the researcher could gain feedback about the questionnaire and how it should be developed. Seven of the 10 students who participated in the pilot study returned their questionnaires.

The following is a list of significant suggestions and changes made to improve the quality of the questionnaire that emerged from the pilot study. The participants in the pilot study suggested that the covering paper of the questionnaire be kept short because people may get bored and not complete the questionnaire.

A further modification concerned the follow-up to the filter question:

I believe ICT can sometimes be more effective than traditional classroom learning in general.

It was changed to:

I believe ICT can sometimes be more effective than traditional classroom learning.

Another suggestion concerned:

Using ICT in learning increases students’ quality of interaction and communication with each other.

This was changed to:

Using ICT in learning increases the quality and amount of student-student interaction

6.2.4 Questionnaire distribution procedures

The procedures for the questionnaire distribution were as follows. Formal approval for conducting the study was obtained from Jeddah University (see Appendix 4). The researcher made initial contact by visiting Jeddah University and presenting the questionnaires Appendix 8, an introduction letter about the study (see Appendix 3), consent forms for the questionnaire (see Appendix 5) and envelopes for submission after distribution to the secretary in the Higher Education Office, who then posted about the research to all the Saudi lecturers who taught the foundation year, were full-time lecturers. To send a request to the men's campus, the researcher asked her husband to visit the secretaries in the Higher Education Office and ask them to distribute the questionnaire. The lecturers were asked to place their completed questionnaire and consent form in an envelope and submit it to the secretary in the Higher Education Office at Jeddah University.

After two weeks, the researcher visited the women's university campus and collected the questionnaires. Cultural norms meant that, as a woman, the researcher could not approach male participants face to face. Therefore, she asked her husband to visit the men's campus at the university. It took approximately 30 minutes to complete the questionnaire. The survey was distributed during March 2016 and the data collection lasted three months.

6.2.5 Questionnaire sample

The researcher collected samples from Jeddah University. The researcher sent an email to prospective participants, inviting full-time Saudi lecturers who were teaching on the foundation year at Jeddah University to participate in the research.

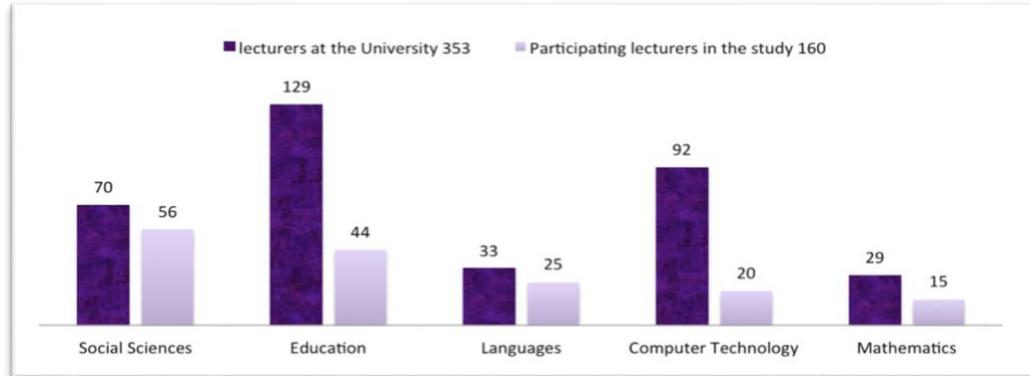


Figure 6.2: Number of lecturers at Jeddah University and lecturers who completed the questionnaire.

Figure 6.2 shows the total number of lecturers across the two campuses of Jeddah University by department and their representation in the study. There are five departments. Computer Technology and Education are the two largest, while the Mathematics and Languages departments are considerably smaller. The sample participating in this study reflects all five departments; however, because of the purposive sampling (i.e., participants must be full-time Saudi lecturers who teach on the foundation year) and convenience sampling (i.e., availability and willingness to participate) methods, the numbers participating do not follow the same practical distribution. In particular, the Computer Technology department is under-represented at just 13% of the sample, when compared with the department representing 26% of all lecturers in the university. Furthermore, the Languages department is over-represented (15% of the sample but only 9% of the university's total lecturers).

6.2.6 Questionnaire analysis procedure

Descriptive statistics were used in the present study to examine the quantitative data collected from the closed-ended questions in the lecturers' questionnaire, which was intended to provide an overall view of the issues of interest. Following the coding of the 160 questionnaires that were returned, the quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS) software (version 23). Many education researchers use SPSS widely in their descriptive analysis (Arkkelin, 2014).

The researcher was able to examine distinctions in the data gathered using a staged approach.

The information derived from the questionnaire was also analysed using cross-tabulation, percentages and frequencies. These data are crucial in identifying certain differences related to the individual participants, which, in turn, serves as a comparative way of demonstrating differences between groups, in addition to helping in the establishment of the extent of the relationship that exists between them (Bryman, 2016). According to Cohen et al. (2011), there are a number of ways of presenting cross-tabulation, percentages and frequencies, to make them easier for readers, which include using charts, graphs, and tables. In this study, the researcher used both cross-tabulation and correlation analysis to determine relationships between the data and to present the data in frequencies.

Process of quantitative data analysis

- 1) Input the data into Microsoft Excel.
- 2) Create a file for the data and name it.
- 3) Use descriptive statistics (frequencies, percentages, cross-tabulation and correlation).
- 4) Understand the results and organise them.

All data were collected in Arabic, which is the participants' first language. The participants' answers to the questionnaire were analysed and relevant passages were translated into English.

6.3 Questionnaire Validity and Reliability

As the researcher discussed as part of the philosophical underpinnings of the research (see Section 5.2), differences in philosophy can influence research quality and implications. Therefore, Golafshani (2003) argued that, when designing a study, researchers should consider two factors when analysing the results and judging the quality of the research: validity and reliability. These are common measurements that must be determined to assess whether a study has been successful (Lincoln & Guba, 1985). While validity is the measure of accuracy, reliability signifies harmonious uniformity among the methods or measures and its clarity is also significant for a piece of research. Hair et al. (2010) argued that a valid measure might not be reliable and vice versa. Therefore, it is seen that both reliability and validity are different but closely related. Similarly, Lincoln and Guba (1985) argued that validity should first be

addressed before issues of reliability, since reliability is a function of sufficient validity, noting that the presence of reliability does not always translate to the presence of validity. Dawson (2007) too, noted the necessity of validity and reliability for accurate analysis and argued that research seeks to reach valid and reliable outcomes based on suitable scientific methods. Researchers need to think carefully about validity and reliability so that the research achieves its intended purpose and the quality of the data can be verified.

6.3.1 Questionnaire validity

To enhance the validity of the questionnaire used in this research, the questions were structured in such a way that they could be used to collect the desired information without leading a respondent to a certain answer (Lincoln & Guba, 1985). Questionnaire or quantitative validity is a measure that ensures the answers received from the participants are meaningful indicators of the construct. There are several ways to gauge whether a questionnaire has internal content validity, meaning that factors such as facilitating conditions are measured consistently throughout the questionnaire (Golafshani, 2003; Cohen et al., 2011). Cohen et al. (2011) highlighted that validity is a fundamental point for the effectiveness of a piece of research. Bryman (2016) supported this view, stating that validity is the most important research construct. There are several definitions of validity. For example, Golafshani (2003:1) defined validity in quantitative research as follows:

“Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit “the bull’s eye” of your research object? Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others”.

Hair et al. (2010) stated that a construct’s indicators must precisely evaluate the concepts used during the study. Furthermore, Golafshani (2003) highlighted that the validity of a research instrument, such as a questionnaire, requires the researcher to determine the degree to which it measures what it is supposed to measure.

There are three different types of validity that researchers should consider: content validity, criterion validity and face validity.

6.3.1.1 Content validity refers to agreement between expert judgements (Wallen & Fraenkel, 2001), which was achieved in this research with university supervision. This type of validity is usually used in social sciences to make certain the

content reflects the domain under investigation in the research (Hair et al., 2010). For example, to validate the questionnaire and to ensure useful content, the researcher asked PhD students at Hull University and her supervisor at Jeddah University to read the questionnaire and provide comments and feedback. In another example, the researcher focused on content validity in the pilot study, as well as achieving strong content validity by asking for expert judgements, such as from university supervisors.

6.3.1.2 Criterion validity “is an alternative perspective that deemphasizes the conceptual meaning or interpretation of test scores. Test users might simply wish to use a test to differentiate between groups of people or to make predictions about future outcomes” (Taherdoost, 2016:32). For example, in Western countries, institutions are usually co-educational, in which males and females’ study together; however, in Saudi Arabia, women are kept segregated, as per the Islamic culture, and the genders are educated separately, as discussed in Chapter Two. This aspect is important in planning research and in deciding which instrument to use. Criterion validity is also significant for interpretation purposes when making comparisons with past research.

Thus, in this research, the researcher used the questionnaire for both male and female lecturers, while the interviews were conducted only with females because Saudi culture segregates males and females. When the researcher designed the questionnaire, she kept in mind the cultural and contextual differences between education systems in Saudi Arabia and Western countries.

6.3.1.3 Face validity refers to how a research instrument can be measured and what is expected to be measured. Face validity determines if “content simply looks relevant to the person taking the test. It evaluates the appearance of the questionnaire in terms of feasibility, readability, consistency of style and formatting, and the clarity of the language used” (Taherdoost, 2016:29).

In this research, the researcher’s supervisors examined the questionnaire and the researcher also conducted a pilot study for the questionnaire. Questionnaires are one of the most reliable data-collecting instruments (Jonassen et al., 1999). However, if the nature of a piece of research is strategic, there could be far-reaching consequences based on the success or failure of gaining valuable data. The researcher must try extremely hard to make sure the questionnaire is well designed. Piloting a questionnaire is considered the safest method for removing imperfections from the design. Forgasz and Kaur (1997) stated that a pilot study holds great significance, as it improves the quality of the questionnaire in terms of the comprehension of the questions and the limitations of the instructions. Gorard (2001) suggested that a pilot

study has two steps: the first involves seeking remarks and criticism about the questionnaire from experts, friends or anyone else willing to help; and in the second step, the suggestions are assessed while considering the design of the main study. According to Gorard (2001), the sample for a pilot study and the main study must be the same. The pilot study in this research was conducted with Saudi postgraduate students at Hull University who had a good understanding of Arabic and English. They were similar to the main study participants in that they had all worked in Saudi Arabia as lecturers. Furthermore, in this research, the questionnaire required careful translation, as explained at the beginning of the chapter, and the researcher used the back-translation technique to ensure the meaning of the questionnaire was maintained.

6.3.2 Questionnaire reliability

Reliability measures the consistency of a research instrument (Bryman, 2016). Reliability in quantitative research can be classified into external reliability (i.e., the ability to produce consistent results over time) and internal reliability (i.e., measuring the consistency of data collection and analysis, as well as interpretation). A test-retest procedure can be used for assessing external consistency; however, as Rudner and Schafer (2001:2) noted, it has a drawback:

“It requires two administrations of the same test with the same group of individuals. This is expensive and not a good use of people’s time. If the time interval is short, people may be overly consistent because they remember some of the questions and their responses. If the interval is long, then the results are confounded with learning and maturation, that is, changes in the persons themselves”.

Another approach to ensuring external reliability is for the pilot sample to be similar to the main study sample. The pilot study in this research was conducted with Saudi postgraduate students who had worked as lecturers in Saudi Arabia and who were asked to complete the questionnaire. All those who took part in the pilot study were native Arabic speakers studying at Hull University who had a good understanding of Arabic and English. The participants were purposely selected based on relevant knowledge, availability and willingness to participate. This increased the reliability of the data collected, which is discussed at the end of this chapter.

Internal reliability (Cronbach's alpha)

In this study, the degree of internal consistency of the questions in the questionnaire was measured using Cronbach's alpha in SPSS 21 (Cronbach, 1951). There were some variables whose true values could not adequately be measured by a single question in the questionnaire, such as the lecturers' attitudes towards using ICT and the strategies they employed. Therefore, several questions (referred to as 'items') were asked in other ways to measure those variables of interest. The number of items under each variable of interest varied. Cronbach's alpha measures the internal consistency of each set of items. Hinton et al. (2004) proposed that the value of Cronbach's alpha should be above 0.7 to consider a scale reliable; for excellent reliability, there should be a result of 0.9. Likewise, Pallant (2013) suggested that Cronbach's alpha should be 0.7 or more to be considered reliable. It is also important to note there are no missing data in each section to make it an appropriate method of ensuring reliability. The results of the reliability test (using Cronbach's alpha) are given below for each scale. Therefore, several questions (referred to as 'items') were asked in other ways to measure each separate variable of interest. The number of questions (items) used for each variable of interest varied but all the items used to measure each variable were included in the analysis of internal reliability; this difference in the number of items used to measure each variable of interest is reflected in the number of items (N) shown in the respective table.

In Table 6.8, Cronbach's alpha was 0.921, a very high value that indicates the items are reliable, with excellent internal consistency

Table 6.8: Lecturers' strategies for using ICT

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
0.921	0.921	5

In Table 6.9 the Cronbach's alpha value was 0.950, a very high value that indicates the items are reliable.

Table 6.9: Lecturers' pedagogical beliefs regarding using ICT

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
0.950	0.950	6

In Table 6.10 the Cronbach's alpha value was 0.949, a very high value that indicates the items are reliable.

Table 6.10: Lecturers' attitudes towards using ICT

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
0.949	0.949	7

In Table 6.11 the reported Cronbach's alpha value was 0.928. This value suggests that the items have excellent reliability.

Table 6.11: Competence and training to use ICT

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
0.928	0.928	4

In Table 6.12 the reported Cronbach's alpha of 0.921 shows that the items have excellent reliability.

Table 6.12: Barriers to ICT use

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
0.921	0.921	5

6.4 Ethical Considerations regarding the Questionnaire

Ethics in research has received significant attention, as reflected in the code of conduct for acceptable university and professional practice (Cohen et al., 2011; Bryman, 2016). Neuman (2007) stated that ethical consideration is an important aspect of any research design. Such considerations relate to both researchers and participants. In the context of this study, a number of steps were implemented to ensure that the standards of ethical research practice were met. First, the University of Hull Ethics Committee approved the proposed research work. The research design included full details of the research approaches and emphasised the researcher's knowledge of the need for a thorough consideration of the ethical issues in relation to the study. Second, in line with Cohen et al. (2011), the main goals of the ethical considerations undertaken in this study were to ensure that the participants were not at risk of harm, to maintain anonymity and confidentiality, to avoid bias, to use an acceptable research

methodology and to pursue accurate reporting as a result of their participation at any stages of the research.

To gain access, the researcher sent a letter to Jeddah University (see Appendix 2) containing information about the study and assurances that the University of Hull Ethics Committee had approved the research. The approach taken by the researcher was established on ethical principles and the guidelines for research and teaching at the University of Hull. Researchers must receive permission to collect their data. In this case, permission was asked for and received from the Education Faculty of the Education Research Committee at Hull University (see Appendix 1). The researcher also obtained an approval letter from Jeddah University (see Appendix 4).

Ethical principles

Researchers should address all the ethical issues and concerns that may affect the participants during data collection. There are four commonly recognised ethical principles in research (Hammersley & Traianou, 2012):

1. Minimising Harm. Will the research cause no harm to any participant? For example, the study should not cause the participants psychological harm, such as embarrassment or unwelcome emotions.
2. Respecting Autonomy. Does the research process show respect to all participants? For example, the process should respect the individual and any cultural considerations and avoid unfair selection and discriminatory practices.
3. Offering Reciprocity. “What should researchers offer [participants]? Should experimental subjects or informants in qualitative research be paid?” (Hammersley & Traianou, 2012:3).
4. Treating People Equitably. Are the participants treated equally?

In this study, the researcher considered the above ethical issues and concerns relating to all the above criteria during the data collection. She did not harm any of the participants and showed respect to all of them. The lecturers were also given notice of the purposes and aims of the research in two ways: first, the researcher gave verbal notice; and second, the researcher sent a written summary with a covering letter, a copy of the questionnaire and a letter of invitation. The invitations were intended to elicit informed consent (i.e., agreement to allow something to happen or to do something, made with complete knowledge of the implications), and they included all

the relevant information of the issues under examination, including the various risks involved (Hammersley & Traianou, 2012).

6.4.1 Consent form for the questionnaire

Seeking informed consent plays an integral role in delivering adequate information so that participants can make practical choices regarding whether to take part in a study. An informed consent form should be provided for participants, as well as a written guarantee of confidentiality, anonymity and clear understanding. It is important that the document is written in simple language that is understandable to the participants and, in this case, it included acceptance and permission from the lecturers (Cohen et al., 2011).

In this study, participants were required to sign a consent form indicating they understood the agreement. According to McNamee and McNamee (2002:25), “informed consent is a standard principle in a variety of professional practices as well as social research: it is the formulation of a widely recognised moral obligation to respect others and take into account their interests”.

Regarding the questionnaire, an informed consent statement, as well as a written guarantee of confidentiality and anonymity, was provided on the first page of the questionnaire for the participants (see Appendix 5).

6.4.2 Privacy and confidentiality concerns

Privacy is represented by controlling the circumstances, timing and extent of sharing oneself (intellectually, behaviourally or physically) with others. For example, “Confidentiality means that the researcher can match names with responses—for example, a face-to-face interview—but ensures that no one else will have access to the identity of the respondent” (Miller & Brewer, 2003:97). With regard to protecting privacy, “What does it mean to keep data confidential, and is this always possible or desirable? Can and should settings and informants be anonymised in research reports?” (Hammersley & Traianou, 2012:3).

Confidentiality applies to the processing of the data that an individual has divulged in a trusted relationship and with the belief that this information would not be disclosed to others without consent and in ways that are contradictory to the purpose of the original disclosure (Wiles et al., 2008). The researcher must be able to protect individuals’ personal information and respect the confidentiality of the study participants in all aspects that relate to their social or personal lives by promising them that all personal information will be secure. The researcher must ensure the

confidentiality of the information that participants provide. The researcher should also respect the confidentiality and privacy of the research. Since anonymity is also granted, “the researcher will not and cannot identify the respondent” (Miller & Brewer, 2003:97).

Johnson and Christensen (2012:122) argued “maintaining the privacy of the data from the research participants is essential to the conduct of an ethical study because participants can be harmed when their privacy is invaded or when there is a violation of confidential information”. In this study, the data protected and privacy on the researcher computer protected by password. Also, participants are not identified by name in the thesis, but are referred to by designation L (for lecturer) together with a sequence number.

6.5 Summary

This chapter has provided a comprehensive explanation of the first instrument and concerned the selection of a specific quantitative method (questionnaire), discussion of its features and an explanation of the planning and preparation undertaken before implementation. The procedures followed and measures taken to ensure the validity and reliability of the questionnaire in the current research were also presented. Finally, ethical considerations regarding the questionnaire were outlined.

The following chapter offers the second stage of the data collection process: the qualitative stage and the interviews conducted.

CHAPTER SEVEN

DATA COLLECTION METHODS STAGE TWO: THE INTERVIEWS

7.1 Introduction

This chapter concerns the data collected during stage two, the interviews, to investigate lecturers' views and their reported practice regarding the issues around using ICT to support students' learning and communication at Jeddah University. The first part of the chapter discusses the rationale for using the interviews, then their design, translation, piloting, procedures, sample and analysis procedures are explained. The validity and reliability of the interview technique is also discussed. The end of the chapter discusses ethical considerations.

7.2 Stage Two: The Semi-Structured Interviews

In the first stage, a broad picture of the lecturers' views regarding ICT use in the classroom to support students' learning and communication was obtained from the questionnaire. In stage two, the researcher wanted to explore the lecturers' experiences, knowledge and opinions regarding pedagogical beliefs, the activity of teaching, ICT policy in the university, barriers lecturers may face when using ICT and the support they receive for using ICT in teaching and learning.

Before offering a justification for using interviews in this study and the relevant procedure, it is worth discussing the interview method, as researchers can obtain comprehensive information concerning respondents' emotions and beliefs based on their personal experiences; this information is significant (Gill et al., 2008).

Kvale (1996:14) defined an interview as "an interchange of views between two or more people on a topic of mutual interest, [which] sees the centrality of human interaction for knowledge production, and emphasizes the social situation of research data". Another definition is that "An interview is a conversation that has a structure and a purpose, it goes beyond the spontaneous exchange of views in everyday conversations, and becomes a careful questioning and listening approach with the purpose of obtaining thoroughly tested knowledge" (Kvale & Brinkmann, 2009:3). Interviews are employed to explore the experiences, views and beliefs of the

participating individuals through shared cultural knowledge. An interview is an extremely powerful tool that can be used to understand others, as well as to access participants' perceptions, the meanings they draw from situations and their constructions of reality (Punch, 2013). Likewise, Rabionet (2011:563) stated that an interview is a "powerful tool to capture the voices and the ways people make meaning of their experience".

There are three types of qualitative interview: structured, unstructured and semi-structured (Thomas, 2017). Edwards and Holland (2013) noted that an advantage of using semi-structured interviews as a data source is that they provide the flexibility to add, delete or rephrase questions as cues to elicit rich, in-depth information. Matthews and Ross (2014) supported this view, stating that semi-structured interviews help in describing people's experiences, which in this case were the various perspectives, experiences and actual stories of lecturers regarding their involvement in the classroom.

The purpose behind the researcher selecting semi-structured interviews was to make use of the joint advantages of unstructured and structured formats. Hence, the researcher designed a set of appropriate questions for the interviewees, as well as follow-up questions for all the main questions. Semi-structured interviews were also chosen for their flexibility in terms of being able to include, delete or paraphrase questions. The researcher then needed to compile a list of all the probable and follow-up questions required.

As a result of the predesigned questions, the semi-structured interviews enabled the collection of comprehensive information and it was possible for the researcher to obtain extremely detailed information in some instances. If the interviewee did not initially understand a question, the interviewer was available to clarify or restructure that question for better understanding. Furthermore, with this type of interview, the interviewees were able to relate and explain their thoughts more effectively regarding the use of ICT to support student learning and communication. If the questionnaire approach alone had been used, the researcher would not have been able to gather lecturers' opinions properly.

Despite all the advantages of semi-structured interviews, they are not without their disadvantages. The value of interviews depends on the participants' level of comfort or discomfort with the topic and their level of truthfulness (Cohen et al., 2011). Other disadvantages are semi-structured interviews can be time consuming and expensive to conduct, the quality of the data depends on the interviewer's interactions

and skills and there is a risk of bias in the framing of questions and in the interpretation of responses (Kumar, 2019).

7.2.1 Designing the interview schedule

An interview schedule is a list of the questions or topics to be covered (Dawson, 2007). The researcher must determine the study variables that are to be measured before writing the interview questions (Cohen et al., 2011). In order to minimise the potential of bias, a researcher must carefully structure the questions in the interview guide.

In this study, the interview process was designed to begin with indirect questions before moving to direct ones. The interview questions were also designed to employ probes and prompts, in order to encourage participants to give honest and comprehensive answers. Generally, as noted by Kumar (2019) interview questions are targeted at obtaining the same information from a whole sample, and so the questions do not deviate from the target of the investigation or the research issue, as would happen in an informal interview. The flexibility and independence of the data collected also remain uninterrupted using this approach.

Dawson (2007) further posited that interview questions should focus on thoroughly exploring the topic of investigation. Good questions in an interview should be clear, neutral and open-ended (Patton, 2002). The first stage of the interview should include a ‘warm-up’ question that is easy to answer, to make the session more relaxing. The researcher therefore, started with easy general questions, such as: ‘Could you briefly talk about yourself and your teaching experience?’ All the interview questions then flowed in a logical order. Questions also related to ‘who’ and ‘why’ to elicit stories and the researcher did not ask numerous questions at once. After the warm-up, the researcher asked about the teaching strategies and methods the lecturers used in the classroom, the use of ICT to support teaching and learning and the influencing factors. Table 7.1 shows the interview questions for the study divided by theme.

Table 7. 1: Interview questions

<p>Interview questions</p> <p>Warm-up questions, such as:</p> <ul style="list-style-type: none">- Could you briefly talk about yourself and your teaching experience?- How long have you been teaching?- Can you tell me about your current teaching and from where you got your degree?- Do you think you have the necessary skills to use ICT in your teaching?- What ICT tools do you use to support student learning and communication? <p>Lecturers' views towards ICT in the classroom to support teaching and learning</p> <ul style="list-style-type: none">- Describe your most preferred teaching style during your teaching and state your role in the teaching and learning process?- Can you describe the activities you use during your teaching?- What are the teaching strategies that could support students' communication?- Could you please give examples of activities that you have implemented in your teaching to support students' communication?- What are the influential factors that restrict you from supporting students' communication?- What ICT tools have you used during your teaching?- Can you talk about the advantages and disadvantages of using ICT in teaching and learning to support communication?- Does the university have an established written policy for the use of ICT in teaching? If so, what is it?- What do you think prevents you from using ICT in your teaching and learning? <p style="text-align: center;">Thank you for answering these questions.</p>

7.2.2 Translating and piloting the semi-structured interviews

The translating and piloting procedures cannot be separated in this section because the interviews were tested as a package. The interview schedules were developed in English and translated into Arabic, the native language of the participants, using the back-translation technique.

The pilot interviews were conducted in the library at Hull University with postgraduate students who worked as lecturers at a Saudi university. The researcher conducted pilot interviews with six students and audio recorded the sessions. A

comprehensive analysis and assessment of the interviews was made possible through the use of the audio recordings, which also increased the research validity and reduced its limitations. It was impossible for the researcher to remember all the responses, indicating the value of digital recording, which helped in saving the interviewees' exact responses and what was discussed (Berg, 2007).

The duration of the interviews was around 30–45 minutes, during which time the interviewer also took notes. After completing each interview session, the researcher asked the interviewee to provide feedback regarding the interview schedule to identify necessary changes and to enhance the interview's structure for the main research. For example, the respondents made a few recommendations for improvements to the following questions:

What are the barriers to using ICT?

This was changed to:

What do you think prevents you from using ICT in your teaching and learning?

The second question:

What is the teaching approach that you use during your teaching?

Was changed to:

Describe your most preferred teaching style during your teaching and state your role in the teaching and learning process?

The respondents also suggested that the interviews should be conducted in a more private setting, as there were several interruptions from students using the library during the pilot interviews.

7.2.3 Sample for the interview

The researcher already had permission to access Jeddah University in order to distribute the questionnaire and, when she did so, she asked the participants who had responded to the questionnaire if they were willing to participate in the second stage, which involved an interview. Those who were willing provided their contact numbers.

Semi-structured interviews were conducted with 16 female lecturers at Jeddah University. However, due to difficulties in accessing the men's campus for culture reasons, the researcher could not interview any male participants, and none of them was willing to progress to the next stage. The interview sample came from different

disciplines (mathematics, English, computing and IT, education, science and the social sciences).

7.2.4 Procedure for conducting the interviews

There are numerous strict protocols that researchers must follow when conducting research interviews to reduce bias and to ensure the quality of the responses (Harrell & Bradley, 2009; Rabionet, 2011). For this study to succeed, the researcher asked the university to provide a quiet room in which to conduct the interviews. Thereafter, the researcher ensured that the participants signed the consent form, after explaining to them what the study was about and their rights during the study (Dawson, 2007; Cohen et al., 2011). The researcher also assured the participants that their anonymity and confidentiality would be kept in relation to the interview recording, transcribed versions and the final presentation of the results.

In every study, the participants should be informed of the purpose, nature, duration and ethical considerations guiding the research process. In this study, the interviewer sought permission from the interviewees to record the interview via voice-memo software installed in a smartphone. This software was critical in making recording through a smartphone easier and more reliable, as the material could later be transferred to a laptop for analysis and transcription. Recording interviews is extremely important for several reasons: first, human memory is limited; second, recording enables a deeper analysis of the participants' responses; third, the researcher can listen to the interview more than once for an even deeper analysis; and fourth, recording reduces the possibility of researcher bias (Dawson, 2007).

The researcher then attempted to make the interviewee feel relaxed and create a soothing atmosphere to encourage the participant to speak freely. The researcher aimed to listen more than she spoke, to obtain rich data. She also took notes to help record the non-verbal aspects of each interview, such as facial expressions or hand gestures. At the end of each interview, the researcher thanked the participant for answering the questions.

7.2.5 Semi-structured interview data analysis

The analysis of qualitative data is iterative and usually takes place immediately after the data have been collected. In this study, the qualitative data obtained from the interview were analysed thematically. Creswell (2009) stated that qualitative data analysis consists of organising and preparing data (e.g., text data, such as transcripts, and image data, such as photographs) for analysis, then reducing the data into themes

via a coding and condensing process. The data are analysed manually in a process of thematic analysis. Memos are developed following examination of the interview transcripts, field notes and organisational documents, and then ideas about the themes are highlighted.

The rationale for using thematic analysis to analyse the data in this study is that it can identify patterns of meaning across a dataset in response to research questions (Braun & Clarke, 2006). The second rationale for a researcher to use thematic analysis is, according to Braun and Clarke (2006), to gain better understanding of the data, particularly when the sample is not very large, as in this study, where it was 16 interviews. Using the thematic analysis method makes useful interpretations possible and helps the researcher understand the participants' thoughts and behaviours. The researcher develops a storyline based on the participants' views and creatively develops the themes through a story that is socially, culturally and psychologically innovative (Vaismoradi et al., 2016). Braun and Clarke (2006) suggested eight stages for thematic qualitative data analysis:

1. The researcher must familiarise him/herself with the data and read, reread and make notes to understand initial ideas from the data.
2. Colour-coding the data generates initial codes by highlighting specific aspects of the interview responses.
3. Re-presentation and re-analysis of the group data depending on the main themes, which are developed by gathering all the codes and relating them to every code of a probable theme.
4. Reviewing all themes.
5. Refining or renaming all themes.
6. Analysis of the final themes.
7. Conducting a discussion of the similarities and differences in the answers supplied, in this case by different lecturers, before discussing the study findings in relation to the findings in the reviewed literature and writing a report.
8. The report should be based on a selection of rich and compelling excerpts from the interview transcripts.

To identify key themes that emerge from the responses, the researcher must read and reread the notes from the interviews. By following this process, the researcher will be able to conduct an effective thematic analysis related to the topic of interest. In this

research, the objective was to determine the lecturers' views regarding ICT use to support teaching and learning and using the thematic analysis method made it possible to gain the lecturers' interpretations, which helps greatly in understanding their thoughts and behaviours. To identify the key themes that emerged from the lecturers' responses, the researcher read and reread the notes from the interviews, in order to discover themes related to the use of ICT in teaching and learning, as well as intervening factors.

In this study, the researcher prepared and organised her data in a file in order to have all the participants' voice recordings on her computer. Every interview was labelled with the name of the respective interviewee. Furthermore, the notes that the researcher took during the interviews were typed and linked with each interviewee's responses. The researcher also created 16 folders, each folder containing a voice recording and interview notes, as well as interview transcripts. To facilitate understanding of the data, the researcher also printed the interview transcripts, in addition to listening to the actual recordings to ensure that the transcripts were correct. The researcher also made notes from the recording to help her understand the initial ideas from the interview. This process was critical in helping the researcher to gain an overview of interesting perspectives from the interviewees.

When analysing the classifications and patterns present in qualitative data, the researcher develops 'codes', which are phrases or words that serve as labels for sections of data. Coding is a term used to refer to the process of categorising, organising, synthesising, describing, and interpreting data obtained about the phenomenon under study. In qualitative research, the coding must be defined in an extremely systematic way, as an extensive amount of data has been used as raw information and a smaller analytical tool is created for concept testing (Cohen et al., 2011). The coding of data is a crucial process in locating key concepts, themes and patterns that exist within the material (Cohen et al., 2011). According to Attride-Stirling (2001), the creation of categories is an intuitive process that is guided by the purpose of the study, as well as the knowledge and orientation of the researcher. The first step that researchers must take is identifying the major themes and sections in the texts from which the themes were obtained. A specific code marks each of the defined sections. Coding is the assigning of labels or tags to data after the data have been evaluated, and is applied to organise the data (Cohen et al., 2011; Creswell, 2009). Researchers use different types of codes.

According to Creswell (2009), coding can be open, axial or selective. Open coding is used when a researcher gives a label to a piece of text to describe and categorise it. In this research, the researcher started by transcribing the interviews, which were clear and understandable. The researcher began open coding by analysing the text line by line and labelling it by asking herself, where, how and when?

The second stage, axial coding, refers to the category labels that are given to a group of open codes to refer to the description of a certain phenomenon. Such labels develop the relationships between concepts and data to make larger themes. As with the previous stage, the researcher gathered the information into categories. She also started to identify relationships and compare ideas between larger and wider categories.

The researcher then moved to the third stage, selective coding, which is used for the identification of major or core data categories to integrate them and form a theory. Selective coding formalises the relationships between a central category or phenomenon and other theoretical frameworks, and the identification and creation of all the other categories are based on this (Cohen et al., 2011).

In this study, a number of themes emerged, necessitating that the researcher explores the codes and data in each theme with a view to comparing the theoretical ideas in the study with those found in the reviewed literature. When a set of themes, that reflected the purpose of the study and was in line with the research goal and questions, had been developed through the data found in the interview transcripts, all the themes were linked together to understand the issues around lecturers' use of ICT to support students' learning and communication.

Various categories were created prior to exploring the relationships that existed between them. By linking the categories together, the researcher also considered the emerging connections that led to the development of the main and sub-themes. The interrelated categories were included in each theme. The intention was to use them to present the qualitative data analysis results. Figure 7.1 maps the major sub-themes as well as coding categories obtained from the qualitative data analysis. The constructed themes were:

- 1) ICT use, including inside and outside the classroom.
- 2) Theme: Internal factors, including the lecturers' pedagogical beliefs, attitudes towards ICT and competence and training to use ICT. The lecturers' pedagogical beliefs related to behaviourism, constructivism or both; lecturers believed in constructivism, behaviourism, or both but

preferred to apply a behaviourist approach for many reasons (such as the long curriculum, anxiety about loss of control and time-consuming tasks).

- 3) Theme: External factors including no clear policy, a lack of available technical support, training and time, and a long curriculum.



Figure 7.1: Themes emerging from the interviews with lecturers

7.3 Validity and Reliability of the Interviews

Gauging the validity and reliability of qualitative research can be problematic (Patton, 2002). Validity and reliability are routinely used in quantitative research and this provides a strong foundation for investigating what they might mean in the paradigm of qualitative research (Golafshani, 2003).

In stage one, the quantitative data demonstrated objectivity, meaning that the researcher was detached from the research process, and this helped to establish reliability and validity. The second stage was the opposite, as the researcher was involved directly in the research process. In order to establish reliability and validity in qualitative research, subjectivity is valued (Sandelowski, 1986). Subjectivity was possible in stage two of the research, as the researcher was involved in the interview

process when interviewees shared their personal reflections. It is important to reflect the experiences and perceptions of participants.

Thus, for qualitative research validity and reliability need to be redefined to some extent. Five approaches exist for ensuring quality within qualitative research (trustworthiness, credibility, transferability, dependability and confirmability) and all five were applied in this study, as explained below.

7.3.1 Trustworthiness

A researcher's knowledge of, and interest in, qualitative research may lead to bias; thus, all researchers must question the trustworthiness of their qualitative research results. Qualitative research is more subjective than quantitative research. Qualitative data must be valid and trustworthy; however, some qualitative researchers argue whether validity is relevant. The validity of qualitative data can be addressed with regard to depth, scope, honesty, richness, objectivity and degree of triangulation (Cohen et al., 2011). Other researchers do not consider validity and reliability as applicable concerns when assessing the quality of qualitative research (Golafshani, 2003). However, credibility, reliability/dependability, transferability and confirmability are applicable.

7.3.2 Internal validity/credibility

In research, credibility is concerned with ensuring that the outcomes reflect the positions of the participants (Golafshani, 2003). Credibility can be described as the degree to which a researcher can have confidence in the true value of the results. In qualitative research, there should be true findings regarding the subjects and contexts under study. This does not mean the findings reflect a single objective reality since, ultimately, participants have different experiences. However, the reported findings should be an accurate representation of the perceptions and experiences expressed by the research participants.

Triangulation is the most common approach for testing the validity and accuracy of a study. It involves the combination of multiple theories, data sources, methods or researchers in studying the same phenomenon and obtaining an inclusive result. Triangulation helps different methods work together for the collection of data and the confirmation of study results (Salehi & Golafshani, 2010). Furthermore, triangulation is used to fill the gaps that would have remained if a single method had been used. The triangulation method contributes to developing multiple case studies, which helps to

support the objectives of a piece of research. Triangulation also helps in answering the research questions and in facilitating the measurement of the efficacy of the research. According to Patton (2002), researchers can demonstrate the accuracy of the collection, analysis and interpretation of the data in a piece of research through triangulation methods.

In this study, methodological triangulation was used to obtain rich and robust data using quantitative and qualitative methods, to facilitate a deeper understanding of the lecturers' beliefs about the ability of ICT to support teaching and learning and the influencing factors. The researcher used triangulation by collecting data from a questionnaire and semi-structured interviews. The researcher also recorded the entirety of each interview and took notes to ensure the respondents' answers were accurately and fairly reported. This procedure was used to benefit from the reflective feedback of participants and to develop mutual comprehension of the phenomenon. A positive outcome gathered from this method is that the participants could clarify enquiry points. The lecturers appreciated having the chance to engage in reviewing teaching practices. Every lecturer demonstrated an interest in the process of conducting this type of phenomenological research.

In this study, credibility was also established by checking the interview transcriptions with the respondents (member checking). Member checking is a well-known technique used to verify the credibility of results and increase the accuracy of the participants' responses in relation to their experiences (Creswell et al., 2011; Birt et al., 2016). There is a suggestion that member checking could affect the credibility of a piece of research because the researcher's knowledge and voice could dominate the participants (Birt et al., 2016). However, the main purpose of member checking is to eliminate the bias that a researcher may experience while analysing the results (Anney, 2014). Another approach is to ask peers who are familiar with qualitative research to examine the data (Creswell et al., 2011). The member-checking technique is used to justify a study's credibility.

The member checking in this study involved returning the translated data transcripts to every participant for modification and clarification (Bryman, 2008). This approach ensured that the participants' stories were their own. Data completeness and accuracy were maximised by using audio recordings, transcribing, translating and analysing.

7.3.3 External validity/transferability

Transferability is the degree to which results apply to other groups, settings or contexts. In qualitative research, transferability can be defined as an assessment of the applicability of a research conclusion to other contexts. Qualitative research is context based, so the findings of the study are contextual, which makes them difficult to generalise. Transferability is similar to the idea of external validity (generalisability) adopted by quantitative researchers. However, whereas the quantitative researcher must show generalisability (for example, by demonstrating the representativeness of the sample), transferability in qualitative research is an informed judgement made by the reader. The role of the researcher is, therefore, to provide sufficient information about the research context to inform such a judgement. Transferability is supported by comprehensive explanations of the research context, which allow for deliberations about the fit with other scenarios. According to Bitsch (2005:85), the “researcher facilitates the transferability judgment by a potential user through ‘thick description’ and purposeful sampling”. Thick description, a term coined by Geertz (1973), is not only dense and rich in detail but is an interpretive description.

In this research, the researcher offers a thick description and involved a selective purposeful sample of participants who could provide authentic knowledge and experience; this information can be used to help readers assess the relevance of the research to their own context, based on any similarities. Readers from both inside and outside the Saudi context can recognise the similarities and differences between the research context and another setting in making a judgment about the appropriateness of transferring the research conclusions.

7.3.4 Reliability/dependability

Dependability is an evaluation of whether the study outcomes represent information deduced from the respondents’ opinions (Guba & Lincoln, 2005). Although the term dependability is applicable when analysing a qualitative study, this idea is valid for almost all forms of research is similar to the reliability applied in quantitative research models. To be certain that qualitative research is dependable, evaluation of its credibility is critical (Golafshani, 2003). Patton (2002) stated that a qualitative researcher should consider dependability when preparing a study, analysing the outcomes and evaluating the research quality. Creswell (2008) argued that

dependability is established to evaluate the results, analysis and recommendations of a piece of research.

In this research, the researcher adopted an 'auditing' approach. All the records relating to the research were kept safe and easily accessible throughout the research process. The researcher also used peer examination, which is very similar to member checking, to demonstrate dependability. In this process, the researcher discussed the process and findings with neutral colleagues, such as fellow PhD colleagues who speak fluent Arabic, and asked their opinions on the following questions: Were the themes good? and Were the outcomes good representations of the data collected? The researcher's colleagues also helped her to recognise areas that were not covered, as well as other problems with the research.

7.3.5 Confirmability

Confirmability refers to the degree to which someone else can corroborate or confirm findings. Establishing confirmability ensures that research findings are the result of the informants' ideas and experiences, instead of the researcher's preferences, characteristics or biases (Shenton, 2004).

In this research, the researcher can show that she acted in good faith sought to minimise the extent to which her background or personal values might influence the research results. The researcher tried as far as possible to interview lecturers from different disciplines (see Section 5.5, Population and Sample).

7.4 Ethical Considerations regarding the Interviews

Ethical research demands that all participants and the research information are honest and that the participants are respected (Dawson, 2007). Researchers must carefully consider ethical issues when conducting research (Cohen et al., 2011). With regard to the interviews, printed forms for informed consent statements, as well as a written guarantee of confidentiality and anonymity, were provided on the first page of the interview schedule for the participants (see Appendix 6).

The lecturers were informed that participating in this research was optional; they could refuse to participate. They could also withdraw at any time. They were assured that, if they decided not to take part, there would be no repercussions regarding their current position at work.

During the interviews, some issues may have arisen, such as those connected to the lecturers' participation interfering with their work in the university, which is a major concern in qualitative studies. Consequently, the researcher tried as much as possible to minimise such disturbance, especially when conducting long interviews (Creswell, 2014). In this study, it was important that the participants understood that the researcher did not have any role or power to change conditions at the university. The researcher also kept all the material connected with the participants' interviews in a safe place that was password-protected, so that the small number of participants would not be recognisable (Matthews & Ross, 2014). Therefore, information about the participants was held on the researcher's password-protected laptop, with a password known only to the researcher. All the interview data and transcripts were kept on the researcher's laptop so that no one could access the information. All the data will be destroyed after the researcher has finished the study.

It was also important that all the participants understood that anonymised quotations from their interviews would be used in the writing up of the interview findings, and were willing for it to happen. While writing up the interview findings, the researcher took care not to use any abbreviations or descriptions that could lead to the identification of any lecturer who participated in the study.

7.5 Summary

This chapter has provided a comprehensive explanation of the second stage of the data collection, discussion of the features, an explanation of the planning and preparation undertaken before and after implementation, the procedures followed, and the validity and reliability of the findings. Finally, the chapter included the ethical considerations undertaken for the interviews.

The next chapter presents a demographic analysis of the study participants and their basic ICT usage.

CHAPTER EIGHT

ANALYSIS OF THE PARTICIPANTS' DEMOGRAPHICS AND ICT USE

8.1 Introduction

The previous three chapters discussed the research paradigm, methodology, and instruments used for data collection in this research. Methodological issues, including the validity, reliability, and ethics of the research, were also addressed. Chapters Eight, Nine, and Ten present the results and a detailed analysis of the data collected from the questionnaires and semi-structured interviews. The current chapter begins by presenting a demographic analysis of the participants and their reported ICT usage. The aim is to provide a detailed context for the data presented in the next two chapters, which address the following research questions.

The main research question:

What are the main issues around lecturers' use of ICT to support students' learning and communication?

Sub-Research Questions

1. What are lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?
2. To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?
3. Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

8.2 Demographic analysis

The questionnaire begins with questions that help the researcher construct a profile of the participants, including their age, gender, qualifications, and academic background, to determine whether the sample is representative. There were 160 responses to the questionnaire, and interviews were conducted with 16 female lecturers. This section presents a demographic analysis of the study participants to provide context for the data related to participants' use of ICT in teaching and learning.

Information regarding the lecturers' discipline and the number of lecturers from each department is relevant to interpreting the possible reasons for their beliefs and the claims made about their use of ICT in teaching at the university since some studies (Cakiroglu, 2008; Onasanya et al., 2010) indicate there is a connection between

lecturers' views regarding ICT use and the subject area in which they teach. Although the sample size is relatively small, this study does reveal that the mathematics lecturers' teaching practices are similar. The lecturers' views may also be influenced by whether they receive pedagogical training rather than simply being told that ICT is an important concept in teaching and learning in education. Cakiroglu (2008) interviewed mathematics lecturers and found they tend to have negative views toward utilising ICT in their courses. However, Onasanya et al. (2010) found that lecturers' attitudes toward ICT are of great importance in the integration of these technologies into tertiary institutions in Nigeria. Onasanya and colleagues found that science lecturers were more pro-ICT than non-science lecturers. Lecturers with a different academic background might have the following viewpoint:

“Didactic methods enable learners to understand what it takes to communicate effectively but do not develop learners' skills or ensure mastery of application in practice. The difference between didactic methods and experiential methods is the difference between knowing about effective communication and being able to communicate effectively” (Managheb et al., 2012:547).

As discussed in Section 4.3.1.1 of Chapter Four, lecturers' demographic characteristics may significantly influence their teaching approaches, as well as whether they accept, adopt, and integrate ICT in their teaching and related practices. Recruiting the sample from different departments allowed the researcher to include the perspectives of lecturers from a variety of disciplines, which adds depth to the data and allows for a deeper understanding of issues related to how technology is used to support students' learning and communication.

8.2.1 Questionnaire sample

This section presents the participants' demographic data, including age, gender, qualification level, and the number of years they have used ICT. The researcher deemed this information important, as it is helpful in gaining an understanding of the context from which the data were collected. Specifically, the participants' demographic information provides a foundation for a clearer understanding of the position from which the lecturers were making their claims. The total frequency of each of the analysed characteristics in the sample of 160 lecturers was calculated and compared using SPSS software to analyse the demographic characteristics.

8.2.1.1 Cross-tabulation: The respondents' age and gender

Table 8.1 presents the demographic characteristics of the 160 lecturers. There are 40 males (25%) and 120 females (75%) in the sample. One of the reasons female lecturers

are over-represented in the sample is the social and cultural value regarding gender in Saudi society, which requires separate campuses for male and female lecturers and students. Thus, given the cultural barriers, it was difficult for the researcher, as a woman, to recruit a balanced sample of male and female lecturers. Of the female respondents, 54 (45%) were 25–30 years old, while 23 (58%) of the male lecturers were in this same age group. Forty-two (35%) of the females and 14 (35%) of the males were 31–40 years old, while 21 (18%) of the females and 3 (8%) of the males were 41–50 years old, and 3 (3%) of the females were 51 or older. The highest proportions of both male and female lecturers were 25–30 years old. When combining the data, there are a slightly higher proportion of male lecturers under 40 years of age (n=37, 93%) than female lecturers (n=96, 80%). This finding suggests that most of the lecturers were relatively young and familiar with new technology. Therefore, if the necessary training and ICT facilities are made available, they are likely to use ICT to support student learning and communication.

The young age structure of the sample may be due to the women’s campus being quite new and employing young scholars who have studied abroad in the UK or US to teach courses, while Jeddah university was still part of King Abdul-Aziz University. When Jeddah University became independent in 2014, most of the older, more experienced staff remained at the older university (Jeddah University, 2014). The male lecturers who took part (40) were younger than 40, suggesting that these males were relatively young and in the early stages of their career. This may be because the campus where the participants are based is quite new and young scholars who had studied abroad were employed to teach courses on that campus whilst it was still under King Abdul-Aziz University.

Table 8.1. Cross-tabulation: Age and Gender of the Respondents

Age range	Female lecturers	Male lecturers
25-30	54 (45%)	23 (58%)
31-40	42 (35%)	14 (35%)
41-50	21 (18%)	3 (8%)
51 or over	3 (3%)	0 (0%)
n(%)	120 (75%)	40 (25%)

8.2.1.2 Cross-tabulation: Years of experience by highest qualification

Regarding the lecturers' experience and highest qualification, as illustrated in Table 8.2, among those lecturers with a bachelor's degree as their highest qualification, 51% (22) indicated they had been teaching 0–3 years, 18 (42%) had been teaching 4–6 years, and 7% (3) had been teaching seven or more years. Among lecturers with a master's degree as their highest qualification, 65% (66) had been teaching 0–3 years, 26% (26) had been teaching 4–6 years, and 9 (9%) had been teaching seven or more years. Among the lecturers with a doctorate as their highest qualification, 25% (4) had been teaching 0–3 years, and 3 (19%) had been teaching 4–6 years. In the total sample, as illustrated in Table 6.2, most of the participants had 0–3 years of experience; 101 (63%) held a master's degree in a relevant discipline, and 43 (27%) held a bachelor's degree. Only 16 (10%) lecturers held a doctoral degree; most of them held a master's degree (n=101, 63%) and had 0–3 years of experience.

Table 8.2. Years of Experience by Highest Qualification

No. of years	(%) Highest qualification		
	Bachelor's	Master's	Doctorate
0–3	22 (51%)	66 (65%)	4 (25%)
4–6	18 (42%)	26 (26%)	3 (19%)
7+	3 (7%)	9 (9%)	9 (56%)
Total	43 (27%)	101 (63%)	16 (10%)

8.2.1.3 Cross-tabulation: Age, gender, and qualifications

Regarding the lecturers' age, gender, and qualifications, as illustrated in Table 8.3, of the female lecturers with a bachelor's degree as their highest qualification 9 (35%) were 25–30 years old, while 9 (52%) of the male lecturers with a bachelor's degree were in this same age group. In the 31–40 age group, 16 (61%) of the female lecturers held a bachelor's degree as their highest qualification, compared to 35% of the male lecturers. Only 12% of the male lecturers in the 41–50 age range held a bachelor's degree as their highest qualification. The one (4%) female lecturer whose highest qualification is a bachelor's degree was over the age of 51. The reason that the highest percentage (n=16, 61%) of female lecturers held a bachelor's degree as their highest qualification and were younger than age 40 could be that the older female lecturers with higher qualifications and more experience remained at King Abdul-Aziz University when Jeddah University was established in 2014.

Fifty-seven percent of the female lecturers with a master's degree as their highest qualification were 25–30 years old, while 14 (64%) of male lecturers with a master's degree as their highest qualification were in this same age group. The larger proportion of male lecturers with master's degrees in the 25–30 age group (64%) may be due to Saudi females having many more constraints, such as family restrictions, that limit their study time. Forty percent of the female lecturers with a doctorate degree was 31–40 years old, while only one male lecturer in this age group held a doctorate degree. Forty-seven percent of female lecturers with a doctorate degree was 41–50 years old, while only two (13%) were over age 50.

Table 8.3. Cross-tabulation: Age, Gender, and Qualification

Age range	Female			Male		
	Bachelor's	Master's	Doctorate	Bachelor's	Master's	Doctorate
25–30	9 (35%)	45 (57%)	0 (0%)	9 (52%)	14 (64%)	0 (0%)
31–40	16 (61%)	20 (25%)	6 (40%)	6 (35%)	7 (32%)	1 (100%)
41–50	0 (0%)	14 (18%)	7 (47%)	2 (12%)	1 (5%)	0 (0%)
51+	1 (4%)	0 (0%)	2 (13%)	0 (0%)	0 (0%)	0 (0%)
Total	26 (100%)	79 (100%)	15 (100%)	17 (100%)	22 (100%)	1 (100%)
Total	120 Females			40 Males		

This demographic information reveals that most of the lecturers at Jeddah University held postgraduate degrees but relatively little teaching experience. Most were young and only had 0–3 years of teaching experience. However, they were highly qualified, with most of the participants holding a master's degree. Furthermore, the analysis reveals that only one male lecturer held a doctorate, while 15 female lecturers held doctorate degrees; female lecturers dominate the sample because of the way Saudi Arabia's university campuses are structured, which restricted the (female) researcher's access to male participants. These demographic factors might play a role in influencing the participants' views and the societal/cultural positioning from which they made their claims and were, therefore, included in the data collection and analysis.

8.2.1.4 Subjects taught by the participants

The lecturers at Jeddah University come from diverse academic backgrounds to teach foundation-year students different subjects, and the number of lecturers in the numerous university departments varies. As illustrated in Figure 8.1, the results show

that the respondents were from five different faculties. Thirty-five percent of the respondents were from the social sciences faculty, while 28% (n=44) were from the education faculty, 15% (n=25) were from the language faculty, 13% (n=20) were from the computer technology faculty, and 9% (n=15) were from the mathematics faculty. Section 6.2.5 of Chapter 6 discusses the sampling details in greater depth.

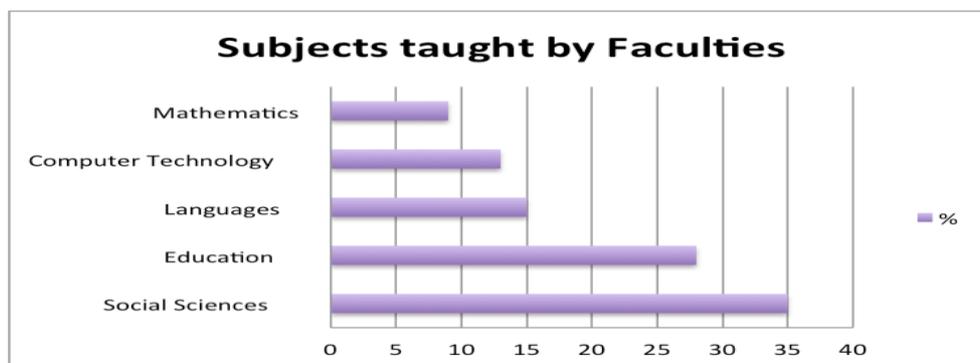


Figure 8.1. Subjects taught by Faculties of the lecturers who completed the questionnaire

These results show that different faculties were represented to varying degrees. The faculties were not evenly represented because not all lecturers participated in the study. The researcher acknowledges that the different ‘weightings’ in faculty responses may have skewed the data; however, the analysis compensates for this by using interview data that specifically states the lecturers’ disciplines. Furthermore, in some cases, the researcher analysed the questionnaire data by discipline to examine possible discipline-related perspectives.

8.2.2 Profile of the interview participants

A profile of the interview participants is presented in Table 8.4 below. Sixteen female participants with 3–13 years of teaching experience as a lecturer in different subjects were interviewed, and they claimed that integrating ICT has had a significant impact on teaching and learning. The interviews were conducted to understand their views regarding ICT integration and determine whether their views, perceptions, and practices are consistent with those described in the literature.

Table 8.4. Interview Participants' Qualifications

Lecturers	Qualifications	Teaching experience (years)	Subject
L1	Doctoral degree in the KSA	13	Mathematics
L2	Master's degree in the UK	4	English
L3	Master's degree in the US	5	Computer IT
L4	Master's degree in the UK	4	Education
L5	Master's degree in the UK	6	English
L6	Master's degree in the UK	5	Computer IT
L7	Master's degree in the UK	5	English
L8	Doctoral degree in the KSA	10	Education
L9	Master's degree in the KSA	6	Sciences
L10	Master's degree in the KSA	4	Sciences
L11	Master's degree in the KSA	6	Social Sciences
L12	Master's degree in the KSA	6	Mathematics
L13	Master's degree in the UK	5	Education
L14	Master's degree in the UK	5	Computer IT
L15	Master's degree in the UK.	3	English
L16	Master's degree in the UK	4	English

It is difficult to determine the extent to which such qualifications impact the decision to use ICT. The data indicated that lecturers who held a master's degree or PhD and acquired their degrees in the US or UK tended to reported more experience with ICT use, and ICT in the classroom more than those who had earned their master's degrees in Saudi Arabia. However, in practice, lecturers with different educational backgrounds were highly interested in ICT, not just the lecturers who obtained their degrees in the US or UK.

The lecturers discussed experiences related to their positions as lecturers in the university sector, under the Ministry of Education's authority. The Ministry of Education governs all aspects of every university in Saudi Arabia, including their resources, lecturers, budgets, and even janitorial services. These experiences were discussed before addressing the research questions to establish the lecturers' social

context, helping the researcher understand the lecturers' experiences with technology in universities and in Saudi society.

8.3 Lecturers' ICT use

Data were collected regarding how many hours per week the lecturers spend using ICT. The lecturers also rated their computer skills, use of ICT tools and applications in their teaching, and use of ICT outside the classroom.

8.3.1 Weekly ICT use

Table 8.5 presents the lecturers' declared time spent, in hours per week, directing students' ICT activities. Thirty-nine lecturers (24%) claimed to spend more than five hours per week using ICT in teaching and learning activities. Only 15 lecturers (9%) reported spending one hour or less for this purpose, while most (n=71, 45%) of them indicated they spend four hours per week online directing students' activities, suggesting frequent ICT use in the teaching and learning process.

Table 8.5. Weekly ICT Use

5 Hours +	4 Hours	3 Hours	2 Hours	1 Hour or less
39(24%)	71(45%)	25(16%)	10(6%)	15(9%)

8.3.1.1 Participants' weekly ICT use, in hours, by subject taught

Based on the lecturers' responses, the subject area taught influences ICT adoption. The study sought to establish whether university subjects categorised as belonging to either the arts or sciences influence the ICT adoption rate among university faculty, as shown in Table 8.6. The amount of time the lecturers in a particular subject area spend on ICT use in the process of teaching students determines the subject area's influence on ICT use. Computer lecturers reportedly use ICT more than five hours per week to direct online student activities, while mathematics lecturers rated their weekly ICT use as just one hour or less to direct online student activities. English and education lecturers use ICT to direct student activities online 3–4 hours per week, and social science lecturers only spend two hours online directing students' activities.

Table 8.6. Cross-Tabulation of ICT Use, in Hours Per Week by Subject Area

	Computer	Language	Education	Social Science	Mathematic
Number of lecturers in faculty	71 (45%)	39 (24%)	25 (16%)	10 (6%)	15 (9%)

Hours of ICT use on a weekly basis	5 Hours +	4 Hours	3 Hours	2 Hours	1 or less Hour
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Most of the lecturers indicated computer science and English language courses are more likely to utilise ICT than other courses, such as mathematics and education. ICT is mostly used in science subjects, as opposed to other disciplines, for example, mathematics and education. Drawing the sample from a number of faculties gave the researcher the opportunity to include the perspectives of lecturers from different disciplines, thus adding depth to the data and providing a more comprehensive understanding of the issues related to how ICT is used to support students' learning and communication. The interviewer asked what the lecturers thought about using ICT in their classroom teaching. The interviewed lecturers expressed their opinions, with one math lecturer noting,

As a lecturer of mathematics, I usually explicate mathematical concepts in class using a board and a piece of chalk. In my own opinion, integrating ICT in teaching and learning is not necessary because students use pen and paper to write answers during exams. Moreover, employing a traditional approach or teacher-centred style has been proven to produce the desired results or grade (L1, mathematics).

Unlike the previous example, an English lecturer noted the subject might affect the way ICT is used to support teaching: *When I started using ICT in my teaching, I noticed that students began to interact with each other (L5, English).* The interview responses also confirmed that the subject might affect the way ICT is used to support teaching, as an IT lecturer noted:

I think ICT helps the students to remember exam answers and helps them to apply their learning via educational videos or playing educational games. Using computers in lessons helps remove boredom in classes and engages the student (L6, computer IT).

The results indicate the L1 mathematics lecturer believes that traditional teaching without any ICT has a significant impact on students' grades rather than students' communication. However, L5, who teaches English, believes that ICT has a positive impact on student interaction, and L6, who teaches IT, believes ICT makes the class more enjoyable and facilitates student interaction.

8.3.2 Participants' computer skills

Table 8.7 shows the lecturers' perceptions regarding their computer skills. In a sample of 160 lecturers, 6 (3%) indicated that their computer skills are very advanced, while

48 (30%) indicated limited computer skills. The vast majority (n=91, 57%) considered themselves to have average computer skills. Only (8.5%) of the lecturers indicated they have very limited computer skills.

Table 8.7. Participants' Self-rated Computer Skills

Very advanced	Advanced	Average	Limited	Very Limited
6 (3%)	7 (5%)	91 (57%)	48 (30%)	8 (5%)

These findings suggest the importance of enhancing lecturers' computer skills if they are to use computers effectively in teaching. Numerous researchers, for example, Koehler & Mishra (2009) and Lawrence & Tar (2018), have indicated that one of the most significant barriers to ICT use in the classroom is university lecturers' lack of ICT knowledge and skills. The lecturers' computer skills varied in this study, but as shown in Table 8.7 above, most have average ICT skills or are relatively unskilled. The interviews with lecturers also confirmed that they perceived themselves as having low to average computer skills, which might lead to limited ICT use.

When asked if they had the necessary skills to use ICT teaching tools to support student learning, most of the lecturers agreed that the lack of ICT skills prevented them from using ICT in teaching. One lecturer with six years of experience noted,

I don't have the required skills. However, I believe that using ICT will be simplified and that my class will find it enjoyable. I think the university should organise seminars, short courses, and workshops on integrating ICT into the teaching process. It is crucial to introduce lecturers and other university department heads to workshops and seminars on technology-based learning and teaching (L9, science).

Another lecturer, who has ten years of experience and graduated with a doctoral degree in the KSA, stated the following:

My skills are really basic in using ICT. I just use it for email, and I do not think I have the skills that allow me to be creative in using ICT in my teaching I'm just using PowerPoint in my teaching to present my curriculum content. I'm keen to be trained on how to integrate ICT into my teaching effectively (L8, education).

Another lecturer, who has six years of experience, stated the following:

I know how to use Microsoft Word and PowerPoint; however, I do not know how to integrate other tools to support my teaching in the classroom. I only use PowerPoint. I'm really keen to integrate them into my classroom because I am aware of their benefits (L11, social science).

The interviews reveal that the participants view using ICT as a pedagogical tool as a challenge for lecturers and that, reportedly, ICT was not given much attention by the head of university.

All the lecturers stated in the interviews that they believed they did not have sufficient computer skills to use ICT to support students' learning and communication. It is important to note here that since the Saudi government is keen to support the integration of ICT into higher education, one might expect that more opportunities would be created for lecturers to be trained in ICT. Of the lecturers who participated in the interviews (exemplified by the data above), L8, L9, and L11 seemed keen to be trained in ICT. Moreover, the results show that most of the interviewed lecturers believed they possess average or limited ICT skills, such as using PowerPoint and other software, including social media and email, as shown in Table 8.7. Although this was a broad assessment of the ICT skills needed for teaching and learning, the results suggest the importance of supporting lecturers' computer skills if they are to use ICT to achieve certain teaching objectives, such as supporting students' learning and communication.

8.3.3 Participants' use of ICT tools and applications

The participants were asked about their use of the most popular teaching applications and software in Saudi Arabia. Sixty lecturers (37%) reported using interactive whiteboards, while a high proportion of lecturers (n=100, 62%) indicated they do not use interactive whiteboards. The greatest proportion of lecturers (n=155, 97%) reported they use PowerPoint and projectors to show data, while only five lecturers (3%) indicated they do not use such technology. Furthermore, 55 (34%) lecturers reported they use Blackboard or Acadox, while a higher proportion (n=96, 60%) indicated they do not use these types of virtual learning environments. When asked about their use of social media applications, 114 (71%) reported they do not use social media in their teaching, while only 35 (22%) use it, and a smaller proportion (n=11, 7%) was unsure (see Table 8.8).

Table 8.8. Participants Use of ICT Tools and Applications

ICT Tool use	n(%)		
	Yes	No	Unsure
PowerPoint	155 (97%)	5 (3%)	0 (0%)
Projector/show data	155 (97%)	5 (3%)	0 (0%)

Interactive whiteboard	60 (37%)	100 (62%)	0 (0%)
VLEs such as Blackboard, Edmodo, and Acadox	55 (34%)	96 (60%)	9 (6%)
Social media applications (blogs, Twitter)	35 (22%)	114 (71%)	11 (7%)

The vast majority of the participants (97%) indicated that they use projectors to present PowerPoint slides while teaching (see Table 8.8 above). This suggests that technology is used mostly to deliver lectures via PowerPoint, and it reflects the idea that lecturers may be focusing on the benefits of ICT in delivering content rather than on the other aspects of learning, such as students' active learning in the classroom. Therefore, it is important to verify the ICT lecturers' perceptions (i.e., views and attitudes) towards these tools and question whether they think ICT is easy to use. This information might help understand why some lecturers use ICT while others reject its use in their teaching and learning.

Some of the lecturers in this study agreed that online tools could support students' learning and communication between lecturers and students if the lecturers give students assignments that include using some of these pedagogical tools. For example, lecturers might assign the students some tasks to perform using that involve using Twitter or creating a Wikipedia entry or blog, which will require them to communicate with other students, or the lecturers might ask the students to develop a group presentation using PowerPoint. Furthermore, lecturers can place their lecture material on Blackboard or Acadox and instruct students to watch PowerPoint videos and complete worksheets at home before the next class session; the in-class session would then be devoted to projects, exercises, or discussion.

According to some of the literature discussed in Section 4.2.1 of Chapter Four, social media applications can, potentially, add value to learning by giving students the opportunity to express themselves, make decisions, and enjoy interacting with their peers, as well as improve their learning and interpersonal skills. In the current study, some of the lecturers agreed that interacting via social media might support students' learning and communication because they will have to listen to others' views and think about how to best offer their own arguments.

When asked why they utilise ICT in their teaching and the benefits of its use, 11 (68%) of the 16 lecturers interviewed indicated the perceived usefulness of ICT in teaching. Although this was a significant internal incentive for using ICT during

classroom lessons, the lecturers also indicated that using ICT in teaching and learning faces several challenges. Many of the lecturers indicated that most lecturers have little knowledge or awareness of the use of ICT as a teaching resource. Therefore, most lecturers indicated a preference for using a limited number of resources, particularly those related to the traditional teaching approach and non-interactive ICT tools, such as projectors and PowerPoint presentations. One lecturer, who has six years of experience, said regarding the use of PowerPoint presentations, *'I use PowerPoint presentations and lectures. My students listen to me all the time. I use lectures as the main teaching method'* (L12, mathematics). Another lecturer, who has ten years of experience, said, *'Most of the time I use PowerPoint presentations during lectures'* (L8 education). Similarly, another education lecturer with four years of experience said, *'Using PowerPoint presentations started becoming popular by 2007 in colleges and universities. Since then, I started courses in Word, Windows and all the programmes that facilitate the teaching process'* (L4, education). A lecturer with six years of experience commented, *'Using PowerPoint in the classroom is useful for students; it draws their attention and makes learning interesting'* (L11, social science). Another lecturer with four years of experience reported, *'I use PowerPoint with a projector for delivering information, and it is useful in clarifying the information'* (L10, science).

Based on their responses, the lecturers use PowerPoint to display slides and read them without engaging students in the teaching process and, hence, use traditional teaching methods. They are not encouraging students to communicate in the classroom, and their students remain passive. The availability and use of projectors in the classroom promote a teacher-centred approach by delivering a whole-class presentation instead of an interactive learning approach. The availability of interactive whiteboards might broaden their teaching methods and use the interactive whiteboard more effectively to support student learning and communication. These results align with the results of Majumdar (2015), who reported that several ICT tools facilitate the application of several theories, such as constructivism, the connectivist theory of cognition, and sociocultural concepts, all of which are important to support communication and collaboration and student-centred.

8.3.4 Participants' ICT use outside the classroom to support students' learning and communication

Some of the lecturers reported using social media to communicate with their students

outside the classroom and share ideas or deliver important information about schedule changes. The interviewees stated that they had installed social media applications on their mobile devices, including WhatsApp, an application used to communicate and send messages, photos, and videos between people, as well as Instagram, an application used to post photos and videos and share them with other people, communicate, and upload photos relevant to lessons and post information that their students might need to know. Other lecturers use apps to communicate with students and other faculty, as one interviewee states, *'WhatsApp and Instagram are apps on my phone. The maths department has an Instagram account for posting information, and for students, it is very useful'* (L1, mathematics). Another mathematics lecturer, who has six years of experience and earned a master's degree in the KSA, said, *'WhatsApp is used for sharing ideas and communicating with other lecturers or with students to let them know about changes to the course schedule'* (L12, mathematics). Interviewee L2, who teaches English, uploaded all the English materials into a Wiki space and asks students to communicate via the Wiki. This lecturer, who has four years of experience and graduated in the UK, added the following,

I always support teamwork. Using the Wiki programme and blogs, I encourage discussions among students to develop their discussion skills. Some of my students prefer to use Twitter to communicate with each other. I avoid employing individual activities because students do not gain anything apart from knowledge (L2, English).

Another English lecturer, who has four years of experience and earned a master's degree in the UK, stated,

I find that using ICT, the especially Wiki platform, makes the students interact with each other and develop their social communication. They are also excited and keen to learn when ICT is involved, thereby making them understand the subjects faster and developing their knowledge (L16, English).

The idea of using ICT outside the classroom was confirmed by one lecturer, who earned a master's degree in the US: *'The use of social media platforms, such as Wiki, blogs, and Twitter, is beneficial to the development of students' social interaction'* (L3, computer IT).

These lecturers (i.e., L2, L3, L12, and L16) seem open-minded about using social media platforms, such as Wiki, blogs, and Twitter, to support students' learning and social interaction, as well as communicating with the lecturer and other students and storing class materials. Integrating Wiki, blogs, Twitter, and other platforms into classroom instruction facilitate feedback, which enables students to learn through

discussion and communication. This is likely to be the case with lecturers who understand the value of ICT. It is encouraging that in this study, the vast majority of the lecturers reportedly use ICT, such as social media and PowerPoint, for educational purposes, which suggests a degree of enthusiasm and willingness to use ICT to support students' learning and communication, whether inside or outside the classroom. The results of the current study are consistent with those of Davidson (2012), who found that using Wikis supports student collaboration and group work, and Chawinga (2017), who found that using Twitter and blogs support students' ability to share information and engage in discussions.

8.4 Summary of the key findings

This chapter presented a profile of the research participants based on analyses of the data collected from the questionnaires and semi-structured interviews. The chapter began by presenting a demographic analysis of the study participants. It then analysed their reported ICT usage, with the aim of providing a detailed context for the data. Some demographic factors seemed to be significant in the use of ICT, such as age, gender, qualifications, teaching experience, and academic background:

1. The age of the lecturer is important to consider when accepting and adopting ICT. For example, in this study, it seems that younger lecturers may be more likely to understand the value of incorporating ICT into their teaching practices to support student learning and communication. From the qualitative data, one Mathematics lecturer who has been teaching for 13 years and whose views are representative of those of other similarly experienced lecturers in the sample said "*ICT in teaching and learning is not necessary because students use pen and paper to write answers during exams*" (see page 162).
2. The gender of the lecturers may be less important to consider than age when accepting and adopting ICT because, in this study, it seems that male and female lecturers both agree that ICT use supports students' learning.
3. Most of the lecturers at Jeddah University hold postgraduate degrees but relatively less teaching experience, and lecturers who earned their degrees in the US or UK tend to have more experience with ICT use in their teaching. See page 156 (Table 8.1) for details of the different age profiles of male and female lecturers in the sample. Most were young and only had 0–3 years of teaching experience. However, they were highly qualified, with most of the participants holding a master's degree.

4. The lecturers' academic backgrounds appear to affect their ICT use. For example, it seems that mathematics and social science lecturers use less ICT in their teaching, while computer, English, and education lecturers integrate more ICT into their teaching as shown in Table 8.6 on page (162) it seems that mathematics and social science lecturers use ICT less than 2 hours weekly while computer science and English language courses are more likely to utilise ICT between 5 and 4 hours per week.
5. Most of the lecturers rated themselves as having average computer skills. In table 8.7, on page (163), the vast majority (n=91, 57%) considered themselves to have average computer skills.
6. Most of the lecturers use ICT primarily for delivering content rather than for other aspects of learning, such as encouraging students' interactive engagement in the classroom. In table 8.8, on page (165), the vast majority of the participants (97%) indicated that they use projectors to present PowerPoint slides while teaching most of lecturers use ICT to deliver lectures via PowerPoint. As well as, from qualitative data on page (166) such as (i.e., L12, L4, L11, and L10) seem used PowerPoint presentations to display slides and read them without engaging students in the teaching process.
7. Finally, the lecturers reportedly use social media to communicate with their students outside the classroom to share ideas, provide information, and inform students of schedule changes. From the qualitative data on page (167), it seemed that some lecturers' are open-minded' such as (i.e., L2, L3, L12, and L16) seem open-minded about using social media platforms, such as Wiki, blogs, and Twitter, to support students' learning and social interaction, as well as communicating with the lecturer and other students and storing class materials.

In the next chapter, an analysis of the data regarding the lecturers' beliefs and practices regarding ICT use, collected from the questionnaires and semi-structured interviews, is presented and discussed.

CHAPTER NINE

ANALYSIS: LECTURERS' BELIEFS AND PRACTICES REGARDING ICT USE

9.1 Introduction

The previous chapter provided information regarding the lecturers' demographic characteristics, and the current chapter reports the findings from the questionnaires and semi-structured interviews to address the identified internal factors that influence ICT use in supporting students' learning and communication. It contributes to answering the main research question by addressing the sub-research questions, which are restated below, along with the main research question.

The main research question:

What are the main issues around lecturers' use of ICT to support students' learning and communication?

Sub-Research Questions

- 1) What are lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?
- 2) To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?
- 3) Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

This chapter is presented in two parts and five sections, as follows. The first part includes Sections 9.2 and 9.3, which present the survey data related to the lecturers' declared beliefs toward ICT use and examine the relationship between these declared beliefs and the teaching methods they claim to use, identifying the tension between them. This is followed in Part two by three sections offering a deeper exploration of internal (lecturer–individual-level) factors influencing ICT use: pedagogical belief (behaviourism, constructivism or blend both approaches) and the teaching strategies associated with different stance; lecturers' attitude towards ICT, and lecturers knowledge and skills in related to ICT use.

Part one: Lecturers' beliefs and practice regarding ICT integration

In this part, data from the questionnaire regarding the lecturers' declared beliefs about ICT integration are presented. They are analysed in relation to the lecturers' claimed use of ICT.

9.2 Declared beliefs regarding ICT use

On the questionnaire, the lecturers were asked about their views and beliefs regarding the use of ICT in teaching and learning. The respondents used a five-point, Likert-type scale (i.e., 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree) to rate the six items investigated.

Table 9. 1: Lecturers' Responses to Statements Regarding Pedagogical Beliefs About ICT

Response	n (%)				
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
I believe that ICT is beneficial for improving students' learning.	59 (37%)	49 (31%)	3 (2%)	18 (11%)	31 (19%)
I believe ICT can sometimes be more effective than traditional classroom learning.	36 (30%)	88 (55%)	28 (18%)	2 (1%)	6 (3%)
I believe that it is beneficial to give students time to work together using ICT.	63 (39%)	65 (41%)	22 (13%)	2 (1%)	8 (5%)
I believe the use of ICT has the potential to improve social interaction in the classroom.	59 (37%)	49 (31%)	3 (2%)	18 (11%)	31 (19%)
I believe that ICT can help shift the balance from teacher-centred teaching approaches to student-centred teaching approaches.	43 (27%)	58 (36%)	49 (31%)	8 (5%)	2 (1%)
ICT can enhance lecturers' effectiveness.	52 (32%)	70 (44%)	23 (14%)	13 (8%)	2 (1%)

Table 9.1 shows the lecturers' responses to statements about pedagogical beliefs regarding ICT. In response to the item, 'I believe that ICT is beneficial for improving students' learning', 59 (37%) strongly agreed, and 49 (31%) agreed. A deeper analysis of the responses reveals that a large percentage of those who agreed or strongly agreed with this statement teach languages (21), computer science (30), or the social sciences (43). This level of agreement with the item might indicate that these lecturers are

beginning to embrace a constructivist perspective of teaching. Other than their discipline, experience may also have played a role in the conflicting perceptions of lecturers regarding the purpose and use of ICT. A closer examination of the questionnaire results reveals that participants who disagreed or strongly disagreed were lecturers with 1–3 years of experience, whereas those who agreed or strongly agreed tend to have more experience.

On the item, ‘I believe ICT can, sometimes, be more effective than traditional classroom learning’, 88 (55%) of the lecturers were in agreement, while 28 (18%) were unsure. These responses might be influenced by conflicting perceptions about how ICT is viewed compared to traditional/didactic classroom learning. The results clearly show that a majority of lecturers claimed to believe in the greater effectiveness of ICT in comparison to traditional teaching methods.

In response to ‘I believe that it is beneficial to give students time to work together using ICT’, 63 (39%) of the lecturers strongly agreed, while only 8 (5%) strongly disagreed (see Table 9.1), which, as shown in the table above, 22 (13%) lecturers were unsure. This finding suggests that a significant number of the participants remained unsure about how ICT can be effectively used in teaching and learning, which might mean the lecturers were unsure about this particular use. It might be that they were unsure whether working together was appropriate or feasible, or they might believe that collaboration depends on more than simply using ICT, for example, the nature of the task and the assessment methods used. Contextual factors applicable to Saudi Arabia, such as cultural expectations regarding communication between individuals of opposite genders and the nature of access to technology (particularly in the case of women, who may experience cultural restraints) may also affect lecturers’ perceptions about the collaborative use of ICT. Or, they may be wary of giving too much control to students.

The next item, ‘I believe that the use of ICT has the potential to improve social interaction in the classroom’, 59 (37%) lecturers strongly agreed. However, the data shows that 33% were unsure about this point, while 31 (19%) strongly disagreed. It can be argued that communication and interaction are important in English-language courses, and lecturers are likely to agree that using ICT is beneficial to enhancing these skills. Those lecturers who disagreed were divided evenly between the mathematics and education faculties. It is quite surprising that education formed a large proportion (53%) of those who disagreed, as lecturers from a discipline concerned with the methods used to promote learning, might be expected to be more open to alternative

ways of learning to meet the needs of their students. An alternative explanation is that education lecturers may be less positive about using ICT because they feel it detracts from the person-to-person nature of teaching.

In response to the item, 'I believe that ICT can help shift the balance from teacher-centred teaching approaches to student-centred teaching approaches', 43 (27%) of the lecturers strongly agreed, and 58 (36%) agreed. Eight (5%) lecturers disagreed, while only one (1%) strongly disagreed. However, the largest proportion (n=49, 31%) were unsure, which implies that a significant number of the lecturers might be unsure of ICT's value in the classroom and, therefore, may not understand its significance in improving teaching and learning. Perhaps they do not think shifting to a student-centred approach is a good idea.

Regarding the item, 'ICT can enhance the effectiveness of lecturers', as seen in the table above, 52 (32%) lecturers strongly agreed, 70 (44%) agreed, and 23 (14%) were unsure. Only two (1%) of the respondents strongly disagreed with the statement. The analysis also reveals that participants who disagreed or strongly disagreed were lecturers with 1–3 years of experience, as opposed to those who agreed or strongly agreed, who had more experience. One possible explanation for this finding might be that more experienced lecturers have mastered the use of ICT in their teaching practices, and hence, there is a possible relationship between lecturers' effectiveness in using ICT and how effective the lecturer is in integrating ICT. This finding may support the TPACK model in that experience may provide lecturers with the knowledge that TPACK suggests helps lecturers integrate ICT effectively.

Thus, the analysis identifies three groups of lecturers: (1) those with positive beliefs regarding ICT use, (2) those with negative beliefs about its use, and (3) those who are unsure about integrating ICT into education. Overall, most participants in this study reported positive views and beliefs about using ICT in teaching and learning. The data show that many lecturers expressed a belief that ICT has the potential to transform education. The Saudi government and universities sending their lecturers abroad to countries where technology is statutorily integrated into the curriculum has, perhaps, led these lecturers to form favourable beliefs about the value of ICT in education. Nevertheless, although the data suggest that many lecturers welcome the idea of using ICT in their teaching practices, uncertainty remains as to the benefits it may offer, as well as some reservations regarding the opportunities for or desirability of student-centred practice. An important factor that appears to have influenced the lecturers' conflicting perceptions is their discipline.

9.3 The relationship between lecturers' beliefs regarding ICT and teaching strategies

Based on questionnaire data, the relationship between the interval dependent variable (i.e., the lecturers' beliefs regarding ICT) and the nominal and ordinal independent variables (i.e., teaching strategies) was investigated using Spearman's rank correlation.

9.3.1 Tensions between beliefs and teaching activities

Table 9.2. shows a correlation matrix of the lecturers' declared beliefs and reported teaching activities. In this study, ordinal or ranked-data variables (i.e., data that can be ranked in order but not precisely quantified) were examined, and the data are non-normally distributed. The Spearman test was, therefore, employed because it is a non-parametric technique and, therefore, suitable for non-normally distributed data; this test is appropriate for ordinal data, measures the strength of the correlation between variables effectively (Coolidge, 2012), and shows the direction of the relationship (Hauke & Kossowski, 2011). Therefore, it was utilised to determine the correlation between any two of the sub-scales or the existing relationship between these sub-scale variables and any other variables.

The null hypothesis states there is no statistically significant correlation between any of the variables. The correlation coefficient ranges between ± 1 , with the absolute value of the correlation coefficient showing the relationship's strength between the variables being compared, and the sign (+ or -) indicates its direction. A +1 value indicates a perfect positive correlation between the two variables being compared, where an increase in one variable leads to a corresponding increase in the other variable. The -1 value indicates a perfect negative correlation, where an increase in the value of one variable leads to a corresponding decrease in the value of the other variable. As suggested by Hadžikadić and Avdaković (2016), in terms of the strength of a correlation between two variables, an r-value of 0.20–0.39 shows a weak relationship, while an r-value of 0.40–0.59 indicates a moderate relationship, and r values of 0.60–0.79 indicate a strong correlation. A statistically significant correlation coefficient manifests when $p < 0.05$. Variables in a monotonic relationship may be seen to be changing at the same time but not at the same rate. For example, this study closely examines how variables are changing and the rate at which they do so in comparison with specific variables. A correlation coefficient is a calculation and a summary of the strength and direction (negative or positive) of a relationship between two variables from the ranked values for each variable, not from the raw data.

In Table 9.2 on the next page, the Spearman's rho values for the correlations between beliefs and strategies are presented. There is a weak positive correlation between 'I believe the use of ICT has the potential to improve communication in the classroom' (row 4) and the claim to use ICT in large group discussions ($\rho=0.123$; row 5, column 4). This means that as the number of lecturers claimed to believe that ICT has the potential to improve communication increases, there is only a slight increase in the number claiming to use ICT for large group discussions. This result suggests that as much as lecturers believe that ICT use has the potential to improve communication, only a few claimed to use strategies that promote such skills.

Table 9. 2: Results of the Correlation Analysis of Beliefs and Strategies (n=160)

	STATEMENTS	1	2	3	4	5	6	7	8	9
1	ICT improves students' learning experience.	1								
2	I believe that ICT is beneficial for improving students' engagement with learning.	0.480**	1							
3	I believe ICT can sometimes be more effective than traditional classroom learning.	0.170*	0.324**	1						
4	I believe the use of ICT has the potential to improve communication in the classroom.	0.268**	0.349**	0.426**	1					
5	I use ICT in large group discussions.	0.130	-0.018	-0.159*	0.123	1				
6	I use ICT in lectures.	0.199*	0.034	0.067	0.049	0.130	1			
7	I use ICT in paired activities.	-0.156*	-0.136	0.017	0.138	0.073	0.307	1		
8	I use ICT in presentations.	-0.349**	-0.208**	-0.183**	-0.181*	-0.181*	-0.101	0.107	1	
9	I use ICT in small group activities.	-0.262**	-0.227**	0.005	-0.213**	0.013	0.026	0.223**	0.354**	1

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

*Correlation is significant at the 0.05 level (2-tailed).

The same belief is significantly negatively correlated with the claimed use of ICT in group activities ($\rho=-0.213^{**}$; row 9, column 4), which is statistically significant at the 0.01 level. This means that the likelihood of this relationship occurring due to chance is about 20%, and as the number of lecturers who claimed to believe that ICT has the potential to improve communication increases, the number who uses group activities decreases significantly. Thus, the lecturers' claims to believe in the potential of using ICT are not associated with its reported use in group activities, which are a valuable strategy for enhancing communication in learning. Another significantly negative relationship is the correlation between 'I believe the use of ICT has the potential to improve communication in the classroom' (row 4) and the claimed use of ICT in presentations ($\rho=-0.181^{*}$; row 8, column 4), which is statistically significant at the 0.05 level. This means that as the number of lecturers who claimed to believe that ICT has the potential to increase communication increases, there is a decrease in the number who claimed to use it in presentations. This finding raises the question of how lectures are delivered in the classroom because today, this is supposedly achievable via ICT (e.g., PowerPoint). Similarly, the result for the belief that ICT can sometimes be more effective than traditional classroom learning (row 3) has a strong significant negative correlation with presentations ($\rho=-0.183^{**}$; row 8, column 3). Hence, as the number of lecturers who believed that using ICT can sometimes be more effective than traditional classroom learning increases, the number of lecturers using it for presentations decreases. This result may strengthen the argument that traditional modes of presentation, such as speaking in front of a class or group without using any technological aid, may be the norm here. This result is more strongly emphasised by the significant negative correlation between 'I believe ICT improves students' learning experience' and the declared use of ICT in presentations ($\rho=-0.349^{**}$; correlation is significant at the 0.01 level), which means that, as the lecturers' beliefs that ICT improves students' learning experiences increases, there is a significant decrease in those who claim to use it for presentations.

There is a weak positive correlation between 'I believe ICT can, sometimes, be more effective than traditional classroom learning' and the reported use of ICT to deliver lectures ($\rho=0.067$). This means that as the number of lecturers who agree with this statement increases, the number of those who claimed to use ICT in lectures decreases slightly. Although this is a weak correlation, the result suggests that ICT use during lectures may be limited to lecture delivery, as indicated by some lecturers in the interviews, and, even then, fewer lecturers might be using ICT. This belief is

significantly negatively correlated with the claimed use of ICT in large group activities ($\rho=-0.227^{**}$), further indicating the disparities between the beliefs claimed and the reported use. This result is further emphasised by the significant negative correlation between agreeing that ICT improves students' learning experience and the claimed use of group activities ($\rho=-0.262^{**}$, significant at the 0.01 level). The results suggest these lecturers' beliefs that ICT can sometimes be more effective than traditional classroom learning is associated with a decrease in those who claimed to use ICT for lecturing. Specifically, the expressed views do not match the claimed practice. There is also a weak positive correlation between the statements 'I believe the use of ICT has the potential to improve communication in the classroom' and 'I believe ICT can sometimes be more effective than traditional classroom learning' ($\rho=0.426^{**}$; significant at the 0.01 level; row 4, column 3). This is an interesting relationship, but it is very weak, which means the correlation only explains about 40% of the effect, and 60% of the relationship between these two variables is random.

In summary, associations were identified between the beliefs and reported teaching strategies using ICT, as shown by the Spearman's rho correlation coefficient results discussed above. The results suggest, however, that most lecturers' claims to believe in the benefits of ICT are not associated with the reported use of activities that support students' communication. This indicates that lecturers who hold positive beliefs about using ICT may not actually be using it in practice. This could be because using ICT may well be linked to personal experience and the organisation as a lecturer (Gill et al., 2008; Teo, 2008). This is consistent with the data in Table 9.2, which show that most lecturers reported using ICT mainly to deliver lectures, as opposed to other methods that develop students' communication skills. The discrepancies between beliefs and practice may well be related to other issues within the university context, such as institutional barriers and professional factors, as discussed subsequently in this chapter. It is acknowledged that the correlation values are very weak between numbers of variables, and even if they were strong, correlation coefficients are only indicators of association and do not suggest or prove causality. An existing correlation between variables does not necessarily suggest causation because the observed relationship or association may be the result of the effect of one or more external factors associated with both the correlation variables. Thus, the results may be deemed tentative.

In conclusion, correlations that are weak and have a small effect size, as shown in Table 9.2, do not prove to be very helpful because, sometimes, the lecturers agreed, and sometimes they did not. However, even though the correlations are not strong, they are still interesting. There are underlying mechanisms this data could not capture that could be the focus of further research. This means the results provide interesting hints, but there is no strong evidence, which suggests another approach, such as observation, might be useful.

Cross-tabulation:

The above interpretation is supported by cross-tabulation between the teaching activities lecturers said they used and how important lecturers thought the activities are in teaching and learning with ICT. The cross-tabulation was computed to compare the relationship between the reported use of ICT in teaching and learning activities (i.e., lectures, presentations, and large group discussions) and how important lecturers perceived these strategies to be in teaching and learning with ICT.

The chi-square test was used to assess the significance of the findings. Since the study design produced categorical data, a chi-square test was appropriate; it is a test used to compare measures of association between two categorical variables. It does not provide information about the strength of a potential relationship. It can only determine whether the relationship between variables is significant. Before discussing the results of the cross-tabulations, it is important to discuss the assumptions of chi-square statistical analysis, which has two basic conditions. The first condition is that it is only utilised for two categories; for example, in the first chi-square analysis, choosing to use ICT in lectures as a teaching activity and the importance of lectures in teaching and learning with ICT were used, thus producing a 2x2 table. The second condition is that all likely frequencies should be greater than five. In this study, the first two tables had frequencies greater than five. The third table had values less than five, which were 2.38. (See appendix) The chi-square test produces a test statistic and associated p-value. If the p-value is less than 0.05 (i.e., a 5% level of significance), then there is a statistically significant association between the two variables (Hair et al., 2010). However, if the expected frequencies in the cells of the contingency table are not all greater than five, Fisher's Exact test should be used to test the null hypothesis instead.

In this study, the results shown in the first two tables are significant ($p=0.05$). However, since the result in the third table is significantly lower than $p=0.05$ (a 5% level of significance), the null hypothesis can be rejected, and the Fisher's exact test was performed (see 'Chi-square test' in the Appendix). In Table 9.3, a high proportion

(n=110, 69%) of the lecturers who agreed that lectures are very important in teaching and learning with ICT use it, while only 5 (3%) said that using ICT in lectures is not important, and one (1%) lecturer was unsure. Nine (6%) lecturers were unsure about the importance of incorporating ICT into lecture activities. However, 13 (8%) of the lecturers reportedly believe that lectures are not important in teaching and learning with ICT, while 8 (5%) reported using no ICT activities, and 6 (4%) regarded lectures as slightly or not important.

Table 9.3: Cross-tabulation of 'How important is the following method in teaching and learning with ICT: Lectures' and Whether the Participants Reportedly Use ICT in Lectures

Response		I use ICT in the following teaching and learning activity: Lectures			
		Yes	No	Unsure	Total
How important is the following method in teaching and learning with ICT: Lectures	Important or very important	110 (69%)	5 (3%)	1 (1%)	116 (73%)
	Unsure	9 (6%)	6 (4%)	2 (1%)	17 (11%)
	Slightly or not important	13 (8%)	8 (5%)	6 (4%)	27 (17%)
N(%)		132 (83%)	19 (12%)	9 (6%)	

Overall, a high proportion (n=132, 83%) of lecturers claimed to use ICT in lectures, and most believed using ICT is very important or important. Of the 19 lecturers who do not use ICT, 8 (5%) reported did not believe ICT is important. Only 9 (6%) were unsure about the statements. In calculating the chi-square results, there is a significant association between the importance of using the lecture method in teaching and learning with ICT and using ICT to deliver lectures. The cross-tabulation statistics suggest that there is a significant association ($p < 0.001$).

In Table 9.4, a very high proportion (n=142, 89%) of the lecturers agreed that presentations are very important in teaching and learning with ICT and use it in this activity. Only 3 (2%) of the lecturers were unsure about using ICT with presentations. However, 8 (5%) of the lecturers reportedly believe that presentations are not important in teaching and learning with ICT.

Table 9. 4: Use Versus Importance: Presentations

Response		I use ICT in the following teaching and learning activity: Presentations			
		Yes	No	Unsure	Total
How important is the following method in teaching and learning with ICT: Presentations	Important or very important	142 (89%)	1 (1%)	3 (2%)	146 (92%)
	Unsure	4 (2%)	0 (0%)	0 (0%)	4 (2%)
	Slightly or not important	8 (5%)	1 (1%)	1 (2%)	10 (8%)
N(%)		154 (96%)	2 (2%)	4 (2%)	

Overall, a high proportion (n=154, 96%) of lecturers who use ICT in presentations believe using ICT is important. Of those lecturers who do not use ICT, (2%) do not believe presentations are important. Only 4 (2%) were unsure about the statements. In calculating the chi-square results, there is a significant association between the importance of using presentation methods in teaching and learning with ICT and using ICT in presentations. The cross-tabulation statistics suggest there are significant associations ($p < 0.003$).

In Tables 9.3 and 9.4, the results clearly indicate the perceived importance of the lecture and presentation methods and the popularity of its use. The results suggest that the use of ICT in teaching and learning activities is significantly associated with the perceived importance of these strategies. It appears lecturers may be missing an opportunity to use ICT to support students' learning and communication because they only use ICT tools to deliver information.

In Table 9.5, although over half the lecturers agreed that large group discussion is very important in teaching and learning with only 4 (2%) used ICT at all, and 5 (3%) lecturers used it were unsure about its importance. However, 46 (28%) of the lecturers believed that large group discussion is not important in teaching and learning with ICT, although 10 (6%) nevertheless used it. A high percentage (n=68, 43%) of the lecturers who believe large group discussions are helpful do not use them, while 28 (17%) believe that large group discussions are slightly important or not important and do not use them Nineteen (12%) lecturers who did not use were large group discussions were unsure whether they are very important in teaching and learning with ICT. These results suggests tension between reported beliefs and practice especially in the large number who claim to believe in the importance of this method, yet do not use it. However, it could be argued that there may be other factors impinging on lecturers' ability to use ICT in group discussions, such as a lack of experience or training, time constraints, or

teaching curriculum-heavy courses. All these factors might influence teaching activities in the classroom.

Table 9. 5: Use Versus Importance: Group Discussions

Response		I use ICT in the following teaching and learning activity: Large Group Discussions			
		Yes	No	Unsure	Total
How important is the following method in teaching and learning with ICT: Large Group Discussions	Important or very important	4 (2%)	68 (43%)	9 (6%)	9 (51%)
	Unsure	5 (3%)	19 (12%)	9 (6%)	33 (21%)
	Slightly or not Important	10 (6%)	28 (17%)	8 (5%)	46 (28%)
N(%)		19 (11%)	115 (72%)	26 (17%)	

Overall, 33 (21%) of the lecturers were unsure about the importance of group discussions, which raises questions regarding the lecturers' understanding of what it means to develop communication and the strategies that are commonly used. Another question this result might also raise is what skills the lecturers might be prioritising and whether they are related to their academic discipline. One explanation could be that lecturers may be using other strategies to support students' learning. However, since 33 (21%) lecturers responded that large group discussions are not important in teaching and learning with ICT reflects that some lecturers may not be fully aware of the importance or usefulness of this strategy or may not possess the broad expertise needed to integrate ICT in learning situations to support student learning. Having ICT facilities available at the university may not necessarily transform the lecturers' practice or endow them with the expertise to do so. These points are explored in greater detail later in this chapter. One alternative explanation may be that other skills are more relevant than communication within the context of the lecturers' respective disciplines. For example, lecturers in languages and the social sciences indicated an inclination to use ICT to support students' learning and communication. It is important to note that developing communication may be a more appropriate objective in learning in these disciplines than in science and mathematics. Therefore, it may be incorrect to suggest that lecturers in these two disciplines are deficient in using ICT to support students' communication. Thus, this thesis argues that enhancing students' communication should be included as an objective in all disciplines.

It can be concluded that large group discussions and related activities are not commonly practiced in the Jeddah University teaching-learning environment. Large group discussions are known to stimulate interactions and communication between students and lecturers, so changing teaching practices and to achieve a balance between a teacher- and student-centred approaches might better support 21st-century skills. Other methods, such as discussions, have less prominence than delivering lectures. Lecturers could use large group discussions and group activities to support communication in the teaching and learning process; however, it appears they may be missing this opportunity.

This is clear evidence that ICT has not transformed educational delivery at Jeddah University in Saudi Arabia because lecturers do not seem to have balanced or blended the behaviourist (teacher-centred) and constructivist (student-centred) approaches, despite the government's efforts to support lecturers' integrating and adopting a constructivist approach in their teaching with ICT. In this study, most of the participants reported using ICT to deliver content rather than other aspects of learning, such as to support students learning and communication.

In summary, the results identify some ambiguities and inconsistencies, including gaps between what the lecturers stated they believed about ICT use and what they claimed to practise. The Saudi culture is complex, and some factors may have influenced the lecturers' responses to the questions, such as institutional (university) expectations. Jeddah University implicitly requiring lecturers to use ICT in their practice might be an influencing factor in some lecturers' responses. However, such responses revealed some conflict with their answers to other questions. For example, there seemed to be a conflict between the declared pedagogical stance of some lecturers towards constructivism and their claims to not use ICT in interactive ways.

When the lecturers answered the questionnaire, they showed high levels of constructivist beliefs and a positive attitude towards ICT use. However, when the questionnaire asked about the practices used in their teaching, the reported practices reflect a behaviourist approach. The results reveal that while most of the lecturers reported appreciating the value of ICT in learning, they had conflicting perceptions of its purpose and implementation. For example, they claimed to believe in constructivism, but their tendency towards utilising teaching practises underpinned by behaviourism reveals conflict in their views about the use and purposes of ICT in supporting students' learning and communication, as well as in how ICT is viewed compared to traditional/didactic classroom learning.

The finding that lecturers tend to rely on ICT primarily to deliver lectures provides an insight into their views about the purpose of technology. The lecturers had positive views regarding the benefit of using ICT; however, it emerged that many factors influence lecturers in not integrating ICT into their classes, even when they believe it is beneficial. These include internal (individual-lecturer level) and external (university-system level) factors, which were evidenced by distinct themes in this research. The former will be addressed in the next part of this chapter, and the latter will be addressed in Chapter Ten.

Part 2: Theme: Internal factors (lecturer or individual level)

From the data, three potential factors that affect lecturers' ICT use in teaching can be gleaned: (1) pedagogical beliefs concerning ICT integration, (2) attitudes towards ICT integration, and (3) ICT skills competence. Figure 9.1 depicts these factors and the sub-categories that emerged from the data. Each of these factors constitutes a sub-theme, and they are presented in Sections 9.3, 9.4, and 9.5.

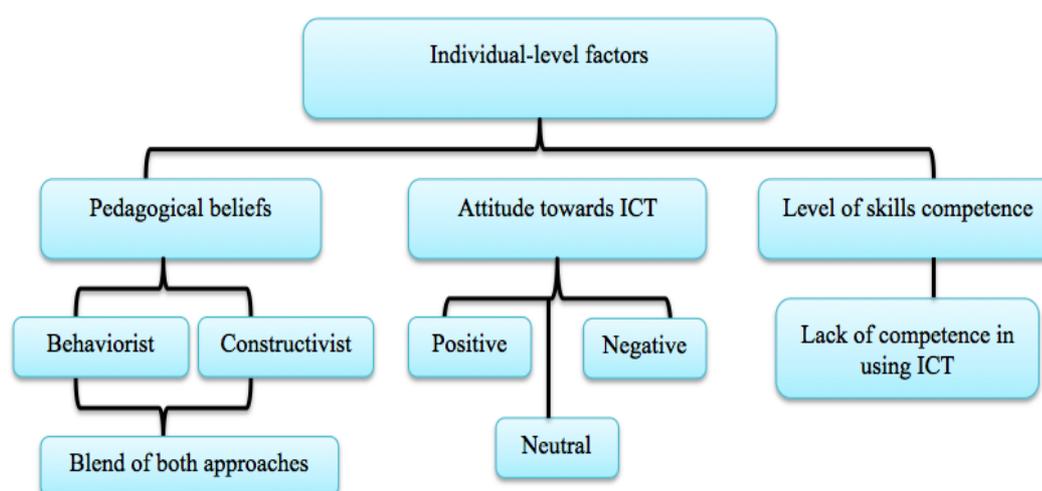


Figure 9. 1: Individual-level factors

9.4 Lecturers' pedagogical beliefs

This sub-theme concerns the lecturers' preferred pedagogy, which is influenced by the lecturers' views of the university's preferred approach. If the university preferred the behaviourist teaching approach, for example, it might influence lecturers' views regarding their teaching style. These subject norms, 'social influence' and 'facilitating conditions', are factors discussed by Venkatesh et al. (2003). The overriding question guiding the investigation of the lecturers' beliefs and attitudes on the use of ICT was as follows: 'Describe your most preferred teaching style during your teaching and state your role in the teaching and learning process?'

During the interview, three approaches were widely mentioned. Lecturers differed on their most preferred teaching, style as well as their views of the lecturer’s role in the teaching and learning process. Their preferred teaching approaches include the behaviourist or teacher-centred approach, where the lecturer is the centre of learning (setting goals and boundaries) and provides information and learning resources, as well as other practices to guide students in their learning. Lecturers are responsible for directing and controlling the provision of information to students, delivering instruction (learning stimuli), seeking and giving feedback to students, evaluating responses, and providing reinforcement. The constructivist or student-centred approach, however, emphasises the student as a critical element in the learning process, which benefits more from collaborative (group) activities that enhance the development of communicative competencies and teamwork, as well as critical-thinking. The third approach is to blend and use both of these approaches.

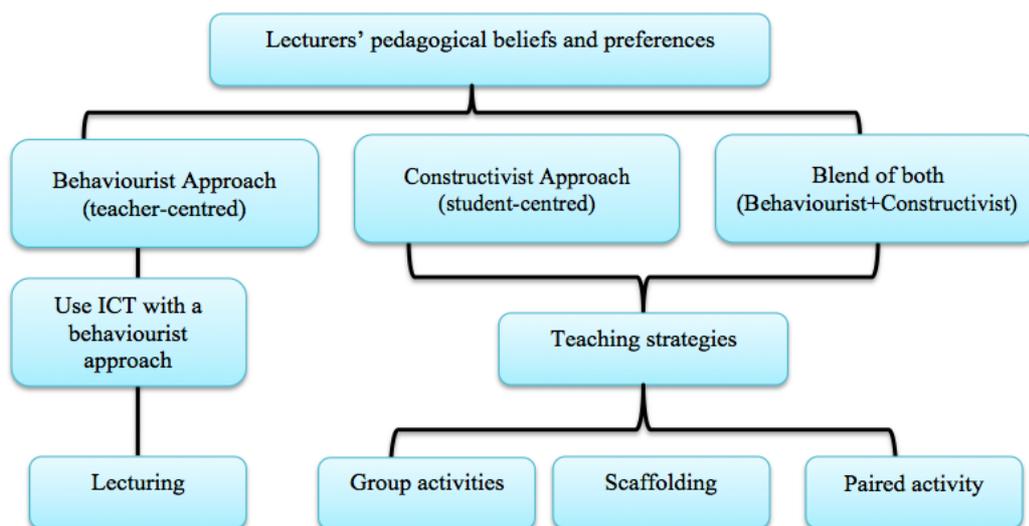


Figure 9. 2. Lecturers’ pedagogical beliefs and teaching strategies.

9.4.1 Behaviourist approach (teacher-centred)

When the lecturers expressed their viewpoints about their teaching style, some lecturers declared they used a behaviourist approach (teacher-centred). The ‘chalk-board-talk’ dominated the teacher-centred methodology among Jeddah university lecturers. For example, ‘As a maths lecturer, I do not prefer using ICT in my teaching. It just wastes time, and lecturing is the strategy I use during my teaching (L1, mathematics). Other lecturers agreed with this statement:

I prefer traditional teaching because of the Saudi pedagogical culture that evaluates students through exams. They must write, so the focus is on writing because there are monthly tests and mid-year exams, which are all in written

form. So, we must teach students how to write, not use ICT or communicate (L10, science).

I believe traditional methods allow students to become successful and to gain a high grade at the end of the year, so I focus on the curriculum and ask the students to memorise the information in the curriculum and recall it. The university needs students to achieve high grades, not to improve their personal skills (L11, social science).

Similarly, another lecturer stressed,

The spoon-feeding teaching style has been traditionally used and is effective for achieving high grades. It is just a waste of time to make students work in groups, especially online. (L12, mathematics).

Participants L1, L10, L11, and L12 describe a more behaviourist textbook (traditional) approach as they were taught in a traditional behaviourist manner (Skinner, 1938). Also, these results might imply that a strong connection exists between the behaviourist approach to teaching and the Saudi culture, as L10 mentions the Saudi culture in the comment quoted above; the university's culture focuses on students' grades rather than their personal skills, such as communication and teamwork. The question is raised from the data of how the university's policies can demand that lecturers use ICT and move away from a behaviourist teaching approach, but the main goal is for students to achieve high grades. In the comments quoted above, the lecturers report encouraging students to study and memorise their lessons, as well as focusing on students' individual learning. These results also indicate that lecturers tend to impose their existing knowledge on students and focus on the importance of memorisation, as L12 mentions 'the spoon-feeding teaching style' in contrast to encouraging students to develop communication and collaboration skills.

9.4.1.1 Use ICT with a behaviourist approach

The finding that a number of the lecturers combine ICT with a behaviourist approach is surprising. One lecturer fear that devices might get broken when using interactive whiteboards to deliver information to students:

I use the interactive whiteboard in my English teaching to make students write vocabulary. However, I cannot let the students work with it because I'm afraid it will break. I also download and watch educational videos on YouTube (L15, English).

Another lecturer states, *'I asked them to use an iPad app to learn English outside the classroom because it is not allowed in the classroom'* (L16, English). A mathematics lecturer with thirteen years of experience had a negative attitude about adopting a new teaching approach in the classroom: *'Why should we change our traditional approach as it is effective for the students to gain high grads? Our teachers taught us in this way'* (L1, mathematics).

From their responses, it can be concluded that the lecturers, in general, have a positive attitude toward the use of ICT in teaching and learning. Furthermore, most of them appreciate ICT's usefulness and usability within the education context and in their teaching. It is interesting that L1 linked the use of traditional teaching to how the lecturers themselves were taught in the past.

The lecturers' inability to use ICT is worsened by the failure of the university to provide ICT-related devices, such as mobile phones or iPads. This type of university-level culture barrier (Hofstede, 2008) may suggest that a large power distance and strong uncertainty avoidance are part of Jeddah University's culture. These factors are key to influencing how the lecturers use ICT in their teaching, whether lecturers prefer a behaviourist, constructivist, or mixed-method approach, providing evidence that Hofstede's ideas about cultural dimensions are rather simplistic (Hofstede, 2008). Therefore, Chapter Two of this study employed methods that differentiate between the cultural, personal, and external factors in that were discussed in Chapter Four. Therefore, it was unsurprising that the lecturers only use ICT to serve the need of this end. The suitability of common ICT resources for behaviourist use and all the ICT resources that the university supplies in the classroom, such as projectors and computers, encourage a behaviourist approach. Finally, the most important reason behaviourist teachers use ICT is to help them perform their job, not necessarily to improve students' learning. Behaviourist beliefs, or the perception that institutional pressure supports a behaviourist approach, were associated with lecturers' preference for using lectures as a teaching strategy.

The lecturers were asked to describe the activities used during their teaching and how the activities affect student communication with ICT. All 16 lecturers said they use lectures as a teaching strategy, even when they believe in the constructivist approach; they gave several reasons for this discrepancy, such as curriculum overload, examination pressure, and large class sizes. Regarding lecturing, one lecturer stated, *'I sometime use PowerPoint during my lecturing because it is good for large classes'* (L1, mathematic), In the same vein, another lecturer stated, *'My teaching strategy is*

lecturing, and in my point of view, it is more suitable for large classes, and students focus on the content of the subject to pass the exam' (L11, social science). According to another lecturer,

I really believe that using lecturing does not help students to interact, but it might help them to pass the exam. Lecturing is the best for long [i.e., heavy] curriculums, and there is no space for activities (L8, education).

Another lecturer added,

Lecturing is the best way (of teaching) for large classes and long [i.e., heavy] curriculums, and I ask my students to do presentations in specific parts of the curriculum in order to perform visual, verbal, and physical communication through movement and body language (L9, science).

L1, L8, and L11 reportedly believe that the purpose of lectures is to help the students focus on the content of the subject being taught, achieve a high grade, and pass the exam. They also state that lectures are suitable for heavy curriculums. L9 commented that she believed '*lecturing is the best way*', and she encourages students to engage in some activities in the classroom, such as giving presentations.

From the interview data, even when the lecturers believed in the constructivist approach, such as L8 and L9, they reportedly do not adopt it because of the heavy curriculum, large class sizes, and pressure from the university department head to cover the entire curriculum before the end of the term. This suggests that reducing the number of students in the classroom and revising the curriculum might enable lecturers to use different teaching activities in the classroom.

Exam-based teaching is a barrier to effective ICT integration, as the focus of the students is on passing the exams, a summative assessment. Lecturer stated, '*students need to achieve a high grade at the end of the term*' (L1, mathematic), ICT integration should be based on a more profound pedagogy, such as a constructivist approach; using ICT or a constructivist approach alone will not help lecturers adopt more effective pedagogical practices. This suggests that there is a need to understand how to blend pedagogical, content, and technology knowledge to integrate ICT more effectively and support student learning and communication, as well as to understand the main issues surrounding the lecturers' use of ICT to support students' communication prior to ICT integration.

9.4.2 Constructivist approach

Several lecturers expressed much more student-centred viewpoints, indicating they have a more student-centred approach to teaching in the classroom. For example, one lecturer stated,

In my teaching, I use activities that allow them to work together as a team, and paired activities or group activities also allow them to collaborate and share ideas, which helps their learning instead of me simply handing them the information. I use different ICT tools in the classroom, such as an interactive whiteboard, and outside the classroom, I use WhatsApp to communicate with students and guide them if they need help. I communicate with my students because the lecture time is very short, and I am trying to employ it to engage in learning activities with students, cover the entire curriculum, and prepare students for exams, which is very difficult and need more time (L3, computer IT).

Another lecturer agreed that constructivism makes more students active in the classroom: ‘*Use different activities in the classroom provides students with lifelong skills and makes students active in the classroom*’ (L16, English).

Lecturers similar to L3, who adopted a student-centred constructivist teaching style, are more likely to make use of ICT inside and outside the classroom, including a whiteboard and the WhatsApp social media platform. L3 supports an alternative teaching philosophy, such as a constructivist approach, rather than simply transferring information to students because she seems feels more compatible with it. She uses a variety of ICT tools in her teaching to support students learning and communication. However, it seems that time constraints and a heavy curriculum pressure lecturer to focus on ensuring students have the knowledge they need to pass exams. Lecturer L16, and L3 who reportedly adopted a student-centred constructivist approach, links it to developing students’ soft skills or ‘lifelong skills’, such as collaboration, teamwork, communication skills, and critical thinking. These skills are not related to a specific subject, but they are very important inside and outside the classroom, including in the students’ future careers.

I think communication valued for lifelong skills (L16, English).

Another lecturer

I think effective communication; make students in better position in the real world. Students need to collaborate since, if they cannot develop teamwork

skills, after leaving university, they may not possess the right workplace social skills (L3, computer IT).

9.4.2.1 Group activities

The 16 lecturers interviewed, 9 reported using collaborative teaching methods, which typically involves assigning students to small groups, in which students develop communication skills and share their ideas through dialogue.

Group activities are my favourite way of teaching students; they make students share ideas and help each other and support learning by creating a Wiki space. Using ICT, such as Wiki or other online forums, is much better because I believe in peer teaching. This helps to strengthen students' motivation and develop their creativity. It also helps to develop their problem-solving skills, self-expression, and teamwork skills (L5, English).

Similarly, another lecturer stated,

Group learning makes students learn how to communicate and share, and it also develops their workplace skills, which they will need after they graduate. It also helps students by improving their self-confidence and giving them independence (L3, computer IT).

A lecturer with four years of experience claimed, *'Small group discussions enable my students to make group presentations using PowerPoint. The curriculum is long [i.e., heavy] and requires the lecturing strategy, but I am against it'* (L2, English).

Lecturer L5's statement implies that using interactive activities with ICT, such as Wiki, motivates students to learn in a group to improve their problem-solving skills, self-expression, and teamwork skills. All three of these types of skills are important for individuals entering the 21st-century workforce. L3 also mentioned workplace skills. L2 complained about the heavy curriculum and favours a less lecture-heavy approach; she makes students share the responsibility of learning by conducting small group discussions, therefore, facilitating learning effectively and taking the ideas of others into consideration.

The study findings also indicate that some of the lecturers agree that using a constructivist approach might enable students to develop communication and teamwork skills for later use in the workplace. Engaging in group activities supports communication in the classroom.

Overall, the lecturers' statements support the idea that group work supports students' development of soft skills such as communication, collaboration skills and

self-confidence, which improve workplace skills. This result is consistent with one of Vygotsky's ideas that the lecturer should construct knowledge with students by engaging them in group activities and collaboration, supporting communication, and enhancing and extending the students' abilities. Group work is a constructivist approach, which is often associated with adult learning, also called andragogy (Knowles, 1998).

9.4.2.2 Scaffolding

Scaffolding is a temporary pedagogical structure that supporting students in learning cognitive tasks they may be incapable of performing alone. Using scaffolding is an important strategy for learning and teaching thinking skills, and it is particularly prevalent in computer classrooms to develop students' thinking and communication skills, such as elicitation, justification, or classification. Student interaction increases during scaffolded instruction because it allows formative classroom interactions. Lecturer L14, who teaches computer IT courses, stated, *'I use scaffolding with my students I asked students a lot of questions and give them time to think and problem solving'*. This lecturer is the only one who mentioned scaffolding specifically and said she uses it frequently, in a variety of ways, to develop students' understanding and thinking skills, such as critical thinking, problem-solving, and justification. She also mentioned that she asks students higher-level questions and gives them enough time to think.

9.4.2.3 Paired activity

Peer discussions, where the students listen to one another and raise questions, support student participation. An English lecturer reported a preference for using this method: *'I use paired activities with my students to encourage them to talk and share their thoughts with others'* (L16). Similarly, other lecturers stated, *'I use peer activities in my classroom'* (L3, computer IT), and *'I believe in peer teaching'* (L5, English). Lecturers L3, L5, and L16 seem to recognise the value of peer learning to encourage student communication and working with each other. These lecturers were among the few who claimed to use interactive and collaborative teaching strategies, such as group activities, scaffolding, and paired activities. Based on their comments, they believe these activities offer students a great opportunity to develop communication skills.

9.4.3 Blended of both approaches

Some lecturers seem to combine both behaviourist and constructivist approaches in their teaching and focus on students' personal skills as influencing factors instead of Saudi culture. A lecturer with four years of experience said,

I always combine lectures with discussions in my teaching. I present scenarios and ask my students to engage in problem solving. This helps to develop their thinking. I encourage them to use PowerPoint presentations, audio recordings, and Prezi lectures (L2, English).

Similarly, another lecturer argued that

I combine lectures with groups and peer activities in my teaching. Students work in groups, and they benefit significantly by leveraging each other's strengths, leading to better learning. If groups of students conduct effective discussions, the outcome will be impressive because the students will benefit from the input of their fellow peers, as well as being evaluated by someone their own age, resulting in timely feedback. (L7, English).

These comments indicate that that L2 believes in combining both approaches in new ways, such as incorporating ICT tools, helps students develop communication, thinking, and problem-solving skills, and L7 appears to combine different teaching activities in the classroom to improve learning outcomes.

In summary, some of the lecturers reported a preference for using a blend teaching approach, benefitting from the constructivist approach and the use of ICT by making the classroom time useful for students by promoting communication, engagement, and knowledge sharing. They perceive that it is important to use both approaches (behaviourist and constructivist) to help students optimise their learning. Their use of ICT in the classroom is similar to the notion of a flipped classroom, in which class discussions and collaboration may enhance students' communication because the content is placed online and available to students before it is taught in the classroom (Educause, 2012). This approach is based on constructivist ideology, although it also offers the opportunity to provide learning experiences consistent with both behaviourist and constructivist theories (Bishop & Verleger, 2013).

Generally, a large percentage of the lecturers interviewed choose a behaviourist approach, even if they believe that a constructivist approach is important. They do so by setting goals and boundaries at the beginning of the term and believe it helps students pass their exams and attain higher grades.

Overall, the results suggest that these lecturers are using ICT in a variety of teaching strategies. Although most of them use ICT in lectures, presentations, and group activities, limited support was found for other teaching strategies, such as large group discussions and paired activities.

9.5 Factors that might cause tension between lecturers' views and teaching practices

Studies have identified several factors that might create tension between the lecturers' views and what they claimed to do, especially in relation to the choice of teaching pedagogy approaches, as discussed in Section 3.6 of Chapter Three on page (61). The lecturers who participated in this study can be divided into three groups: those who use a behaviourist or constructivist approach and those who blend both of these approaches. Regarding ICT, some used ICT in the past but stopped because of the issues they faced, which are discussed below. Some have never used ICT with any activities and just focus on delivering the subject content to students, and a third group anticipates using ICT at some time in the future if the problems they face currently are resolved. Factors that might influence the lecturers' choice of pedagogy with ICT include individual, interpersonal, and institutional or external factors.

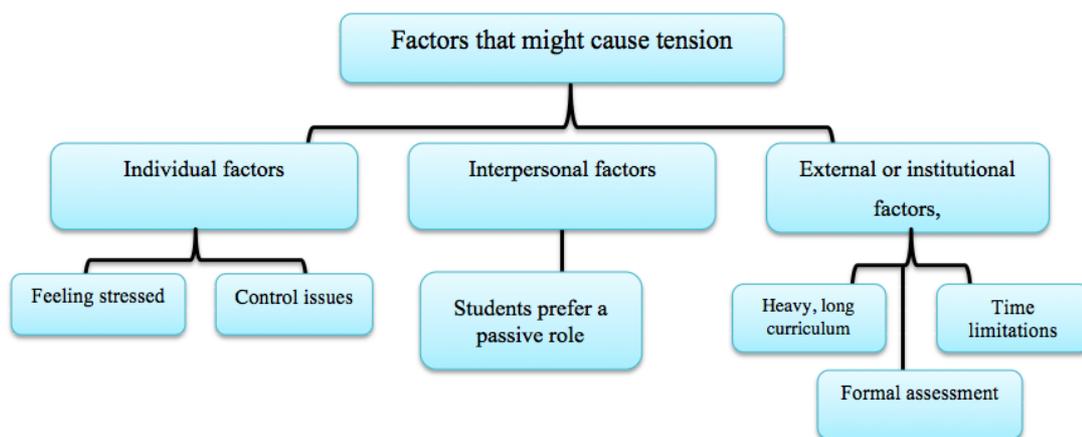


Figure 9. 3: Factors that might cause tension between the lecturers' views and practices

9.5.1 Individual factors

The results reveal that certain factors cause tension between the lecturers' beliefs and what they claimed to do in the classroom: feeling stressed, lacking knowledge and skills, and control issues in the classroom.

9.5.1.1 Feeling stressed

From the interview data, it can be concluded that seven lecturers felt stressed because of the large amount of work they have to complete. Most of them reported having supervisory and teaching responsibilities; for example, *'We lecturers are assigned for teaching and supervision of graduate students and other administrative work'* (L4, education). Another lecturer agreed with this claim: *'I have many tasks to do in addition to my teaching. I have to carry out exam supervision and do the planning for my lessons'* (L16, English). These comments indicate that stress has a negative effect on these lecturers' teaching practices. Since lecturers may feel stressed because of the excessive workload, it is suggested that the Ministry of Education consider reducing lecturers' administrative workload, enabling them to focus their attention on teaching.

9.5.1.2 Control issues

Six of the 16 lecturers interviewed indicated that when lecturers use a student-centred approach in the classroom, the class becomes chaotic, so they prefer a teacher-centred approach. For example, L8 stated, *'I lose control of the class when I have discussions with the students'* (L8, education), and in the same vein, another lecturer stated, *'Learning through group activities allows students to take the initiative to discover new ideas. However, I sometimes lose control in the classroom, so I teach students in the traditional way'* (L6, computer IT). Control issues led to L8 and L6 applying a teacher-centred approach instead of a student-centred approach and do not give students many opportunities to interact and participate in the classroom beyond asking questions during lectures.

9.5.2 Interpersonal factors

In the current context, interpersonal factors refer to the influence of persons centrally or peripherally involved in the teaching process, such as students, department heads, or the university. Lecturers consider students as an interpersonal factor when choosing their pedagogy.

9.5.2.1 Students prefer a passive role

In the view of number of lecturers, most Saudi students prefer to play a passive role instead of actively engaging in the teaching process because the curriculum is designed to be taught, to get higher grades. The Saudi culture is collectivist according to Hofstede's national culture model, so earning certificates and high grades are more

important than learning other skills, such as communication. It is also linked to the power distance concept as students see lecturers as the source of authority.

Therefore, even when lecturers believe the constructivist approach is more effective, they tend to apply a traditional behaviourist approach because students prefer the lecture method:

Don't be surprised; I prefer the traditional approach in my teaching because most of my students focus on getting higher grades in exams. However, I'm not saying that ICT is useless. I am aware that using ICT is good in supporting learning, but the overemphasis on high grades has made me apply the lecture method more. (L4, education)

Lecturer L8, who teaches education courses, concurred with L4's statement, saying, "Students prefer to be taught". According to another lecturer, 'It is very difficult to make the students participate in the classroom because they prefer to be taught' (L9, science). These comments indicate that L4, L8, and L9 believe all students expect to play a passive role while teachers actively transfer knowledge. There is also a link to the uncertainty avoidance concept as students expect to be told fixed and certain 'truths' and do not want to risk uncertainty or make mistakes.

9.5.3 Institutional or external factors

In the context of this study, external factors refer to the university system. Two factors emerged from the data analysis: a heavy or 'long' curriculum, time constraints, and formal assessment

9.5.3.1 Heavy, long curriculum

While discussing the curriculum, lecturer L11 (social sciences) stated,

"The curriculum is long [i.e., heavy], and the university forces us to finish it before the end of the term. It is difficult due to pressure from the department head, but if the curriculum were reduced, I would use ICT in the future".

According to another lecturer, 'The university head asks us to finish the curriculum on time, so we are hurrying to finish it, and I'm using PowerPoint presentations in all my lectures' (L9, science). These results indicate that L3, L9, and L11 believe the heavy curriculum prevents them from using different teaching activities in the classroom. The data reveal that lecturers have a heavy curriculum to teach and time restrictions as well as, need to prepare students for exams. L3 reportedly feels a lot of pressure from the head of the university and stated,

The head of our university emphasises completing the curriculum on time and focusing more on students' grades than students' skills. Without this pressure, I would use various activities that I have learned about (L3, computer IT).

9.5.3.2 Time limitations

Concerns about time constraints were also present in some of the interview responses. Lecturer L4, who teaches education courses, stated, *'Using different activities in the classroom often takes up much of the teaching time'* (i.e., is time-consuming). According to another lecturer,

We have no time since we are busy all the time and because of the long [i.e., heavy] curriculum. Also, ICT training needs to be learned via seminars, using applications to make lecturers understand how to integrate ICT (L16, English).

Lecturer L4 was greatly concerned about time limitations and stated that she believes *'using different activities'* requires more time than lectures, which is crucial when teaching a heavy curriculum. These comments reflect the lecturers' awareness of time constraints and the need for training in effective ICT use.

9.5.3.3 Formal assessment

Jeddah University's assessment system uses summative assessments, and teaching focuses on imparting the knowledge students need to perform well on formal exams. Students memorise information they will need to know for the pen and paper exams: *'I believe traditional teaching methods prepare (students) for exams. Students must prepare for exams'* (L12, mathematics). Other lecturers made similar comments, such as, *'The focus is on getting higher grades on exams'* (L4, education).

As instructors, lecturers have considerable power in the classroom. Students tend to be preparing for exams rather than on future jobs or being a good communicator; how the curriculum is taught is driven by the students' need to perform well on the pen and paper exam at the end of the term. The pedagogical stance of some of the lecturers in this study, who appear to favour constructivism, conflicts with what they claim to do. The lecturers were also hesitant to abolish behaviourist teaching methods for various reasons, such as being required to teach a heavy curriculum, facing rigid time constraints, and fearing the loss of classroom control. All these factors might influence lecturers' practices, preventing them from applying a constructivist approach, and using ICT in their teaching to support students' communication.

It is suggested that in terms of Hofstede's model, the Saudi culture supports a more teacher-centred approach. In the interview data, lecturers said that the university culture prevents them from using a constructivist approach or adopting a blended approach because they could not fully cover all the required topics if they used it. This led to tensions and contrasts between the lecturers' personal beliefs and the head of the university's demands, which emphasises delivering the full curriculum on time and focusing on students' grades.

In summary, it can be shown that feeling stressed, fearing a loss of control, and students preferring to be taught a heavy curriculum, as well as time constraints and the use of formal assessments, are some of the core factors that might affect the lecturers' use of ICT in teaching and learning processes. Nonetheless, it can be noted that some lecturers employ a student-centred approach when conditions allow.

9.6 Lecturers' attitudes towards ICT

Lecturers' attitudes towards ICT are explored in this section. On the questionnaire, the lecturers were asked about their level of agreement or disagreement with nine statements regarding the impact of ICT in teaching and learning. In this case, those with positive attitudes toward ICT were expected to agree with all nine statements. The pattern of responses is shown in Table 9.6.

Table 9.6: Lecturers' Attitudes Toward ICT

Response	n(%)				
	Strongly Agree	Agree	Unsure	Disagree	Strong. Dis
ICT is important to instructional practices	94 (59%)	48 (30%)	15 (8%)	2 (1%)	1 (1%)
ICT is important for learning in the classroom.	97 (60%)	53 (34%)	5 (3%)	4 (2%)	1 (1%)
ICT has an important role to play in teaching and learning.	75 (47%)	57 (35%)	26 (16%)	1 (1%)	1 (1%)
Using ICT has the potential to improve students' learning in the classroom.	103 (65%)	28 (17%)	0 (0%)	4 (2%)	25 (16%)
Using ICT in learning increases the quality and amount of student-student interaction.	65 (41%)	57 (36%)	2 (1%)	4 (2%)	32 (20%)
Using social media platforms, such as Wikis, blogs, and Twitter, is beneficial to the development of social interaction.	57 (36%)	59 (37%)	1 (1%)	5 (3%)	38 (25%)
Lack of knowledge and skills prevents me from using ICT.	103 (65%)	26 (16%)	22 (14%)	5 (3%)	4 (2%)

The first item concerns the importance of ICT use in instructional practices. The results indicate that a high percentage of respondents (n=94, 59%) strongly agreed, and only one person (1%) strongly disagreed. Forty-eight (30%) of the lecturers agreed that the use of ICT is important to instructional practices. Fifteen (8%) were unsure, and only 2 (1%) lecturers disagreed with the statement. Those who agreed were predominantly from the languages, computer technology, and social science faculties. The results reflect a clear difference in the relevance of ICT to certain disciplines, as perceived by the lecturers. This point is quite important in understanding that there may be differences between the ways people claim that ICT is integrated into learning by the various disciplines and the purpose that they state it serves, particularly in developing students' learning and communication. This point was reinforced in the results showing lecturers' perceptions about the importance of ICT use in instructional practices.

Regarding the item, 'ICT is important for learning in the classroom', it can be seen that 97 (60%) respondents agreed that the use of ICT is beneficial in improving learning in the classroom. Only 4 (2%) lecturers disagreed, and only 1 (1%) lecturer strongly disagreed with the statement. Thus, most of the lecturers are aware of the value of using ICT in teaching and learning.

On the item, 'ICT has an important role to play in teaching and learning', almost half (n=75, 47%) of the lecturers strongly agreed about the important role of ICT in teaching and learning in the classroom, and 57 (35%) agreed. Twenty-six (16%) of the respondents were unsure. Only 2 (2%) of the lecturers disagreed or strongly disagreed with the statement; both of them are over age 50 and teach science courses, which indicates that although the sample size is quite low, these data reflect the idea that the nature of a discipline may play a role in the choice of methods and, perhaps, purpose. However, given that this number represents only 2% of the lecturers in the science faculty, it is not enough to conclude that this might reflect the inclination of all science lecturers at this university. Slightly less than half (n=75, 46%) of the lecturers strongly agreed ICT plays an important role in teaching and learning, while only two (2%) lecturers disagreed or strongly disagreed.

Responses to the item, 'Using ICT has the potential to improve students' learning in the classroom', show that 103 (65%) lecturers strongly agreed, and 28 (17%) lecturers agreed, while 4 (2%) lecturers disagreed, and 25 (16%) strongly disagreed

with the statement. Many lecturers reportedly believe that ICT improves students' learning in the classroom. However, from the interview data, it seems many issues prevent teachers from integrating ICT into classroom discussions; these issues are addressed later in the current chapter, as well as in Chapter Ten.

Regarding the item, 'Using ICT in learning increases the quality and amount of student-student interactions', about 65 (41%) lecturers strongly agreed, while 57 (36%) agreed. Only one (1%) of the lecturers were unsure. In contrast, 32 (20%) lecturers strongly disagreed with the statement; this finding indicates that a significant number of the lecturers do not believe ICT achieves this particular outcome, although they may consider it valuable in other respects. However, the dominant view is that the use of ICT is highly effective in increasing the quality and amount of communication students have with each other.

For the item, 'Using social media platforms, such as Wikis, blogs and Twitter, is beneficial to the development of social interaction', the results show 57 (36%) lecturers strongly agreed, and 59 (37%) agreed, while 38 (25%) lecturers strongly disagreed and 5 (3%) disagreed. Only 1 (1%) lecturer was unsure. It seems that most of these lecturers welcome the idea of using social media platforms that could improve students' communication and social interaction skills, but only a few lecturers include social media into their teaching.

With regard to the suggestion that 'A lack of knowledge and skills prevents me from using ICT', the results reveal that 103 (65%) lecturers strongly agreed, while 26 (16%) agreed, 3 (5%) disagreed or strongly disagreed, and 22 (14%) were unsure. Most of the lecturers reportedly believe that the lack of skills prevents them from integrating ICT into their teaching to support student learning and communication. The 22 lecturers who were unsure may have answered as they did because their non- use of ICT may be due to factors other than the lack of skills and knowledge required to use ICT, such as their pedagogical beliefs or external factors, as discussed in Chapter Ten.

Overall, the data suggest that many lecturers have positive attitudes about using ICT in their practice but remain uncertain about the benefits it may offer. Most lecturers agreed that ICT is beneficial to their practice. It appears that some of the lecturers have not adopted ICT despite appreciating its pedagogic benefits because the current teaching environment does not support it. These results were confirmed in some of the interviews with lecturers, who were sampled from those who answered the questionnaire.

9.6.1 Facilitate ICT use

The results indicate that most participants consider ICT use helpful in facilitating learning activities and expressed positive attitudes regarding its use because they believe it can facilitate teaching and learning in various ways, as indicated in Figure 9.4.

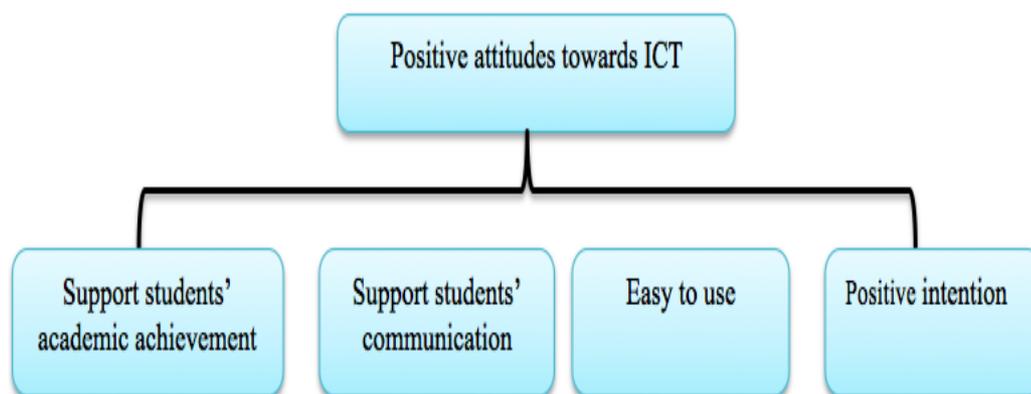


Figure 9. 4: Lecturers' attitudes towards ICT.

9.6.1.1 ICT supports students' academic achievement

Several lecturers declared that students' learning and communication could be improved by using ICT in teaching. For example, an English lecturer explained,

ICT supports academic achievement. It can be used for coordinating and providing improved lessons, facilitating teaching, and making it easier for [students] to absorb the lesson. Students are more active and participatory. The lecturers enjoy their work more, which is reflected in students' progress and performance (L7, English).

Another English lecturer agreed with these sentiments:

It helps the students to remember exam answers, aids learning and teaching, and helps them to apply their learning via educational videos or playing educational games. Using computers in lessons helps eliminate boredom in classes and engages the students; ICT is an important tool to increase students' understanding and also to increase their individual participation and engagement. It has helped to cross all geographical boundaries, and students are, therefore, able to engage, no matter where they are (L2, English).

Two lecturers from different disciplines stated, 'Students are more active in the class. It aids information delivery. It also promotes student academic achievement' (L4, education), and 'It is simple to use and is useful for students. They can easily understand the lessons. Students feel excited during the lesson' (L9, science).

Lecturers L7 and L2 were also noted to support ICT integration in teaching and learning, especially those that allow students to be responsible, able to accomplish tasks assigned to them with little supervision. This is very critical in preparing students to live in society, as well as work effectively in the workplace. This can only be achieved by allowing a change in the flow of information from traditional approaches and media, such as lectures and presentations, to individualised learning through online access, leading to greater student input, in addition to the more effective use of time (Hue and Ab Jalil, 2013; Gee and Umar, 2014). Students learn how to communicate and articulate their ideas clearly by sharing them in group projects. The lecturers also indicated that ICT is vital for enhancing students' achievement as it increases the students' level of interest. Every lecturer in the study uses ICT to present lessons. PowerPoint is widely used, and only one of the lecturers use Keynote, the Mac equivalent, to prepare lesson slides.

9.6.1.2 ICT supports students' communication

The interviewees remarked that a constructivist approach and ICT might be linked with improved communication skills through, for example, teamwork and collaboration. Although these skills are not related to any specific academic subject, they are widely applicable inside and outside the university setting. The perceived usefulness of ICT is evident in lecturers using ICT to facilitate explaining ideas clearly and simply. The lecturers stated that ICT is vital to clarifying and simplifying information for students, and effective communication helps bridge the gap between the students and lecturer:

ICT helps students with communication and helps the lecturer to explain complex lessons, aiding student comprehension. Additionally, lecturers can create interactive lessons, which improve students' concentration and attendance (L13, education).

In line with this comment, another lecturer noted, '*ICT can help lecturers and students to communicate easily, and using ICT leads to improved communication between lecturers and students*' (L3, computer IT). A similar view can be seen in the following comment:

ICT acts as a conduit for delivering lessons. It is a powerful way to improve learning and make it more exciting and to improve teaching (L10, science).

One lecturer specifically mentioned using ICT to facilitate the sharing of ideas:

Using ICT improves idea sharing between students and improves their knowledge and communication. It develops and enhances the skills involved in student-lecturer interactions (L15, English).

The above results indicate that some lecturers (i.e., L3, L10, L13, and L15) believe that integrating ICT into the classroom helps facilitate the explanation of complex ideas. L13 reported that using ICT in the classroom helps students to understand lessons easily. While L3 claimed that ICT improves the relationship between lecturers and students, L10 believes that using ICT in the classroom makes students more enthusiastic about learning and sharing ideas. Another interesting point related to using ICT to support student learning and communication, as stated by L15, is that it ‘*enhances the skills involved in student-lecturer interactions*. Another English lecturer similarly views ICT as promoting communication among students, as well as between students and the lecturer:

Using ICT helps make teaching more effective. When ICT is used, communication between students increases, the students’ focus on lessons can be felt, the cooperative spirit between the lecturer and students is increased, and discussion and talking skills are developed (L16, English).

These results imply that using ICT in the classroom increases the cooperative spirit, as L16 mentioned above, as well as develop students’ communication skills. Lecturer L11 expressed similar beliefs:

ICT makes learning more interesting. Students are getting more views on certain subjects as compared to what is mentioned in the textbooks, but when using ICT, such as online discussions, students can brainstorm about various subjects. This makes the study more interesting and increases participation among the students. Through debate and effective communication, students are in a better position to grasp concepts and retain them longer. I use technology for PowerPoint presentations and to display movies that explain social science topics that cannot be explained by classroom experiments (L11, social science).

L11 mentioned an interesting point related to using ICT: it makes students brainstorm, and the subject becomes more interesting for the students. Students can watch a video that explains complex concepts more clearly than a simple lecture.

Another lecturer emphasised the importance of collaboration skills as they relate to ICT in higher education:

Using ICT in the classroom plays an important role in creating an interactive learning environment. ICT offers a great opportunity for learning and teaching and connects students with each other at a time in which learning to work with others and collaborate has become an extremely important skill in higher education (L7, English).

The respondents stated that they use educational videos streamed via YouTube, British Broadcasting Corporation BBC, and social media because they support student learning. One lecturer remarked,

I begin the class with a BBC video clip to make the students more active. I don't play the video until they get bored, and then I simply play it to engage them again and ICT has broken a lot of barriers between the student and the teacher, especially Twitter, Facebook and other programmes that facilitate the communication and interaction process (L5, English).

In this study, the data reveals the lecturers' perceptions that integrating ICT into the teaching process facilitates students' communication with lecturers, particularly when explaining complex concepts. ICT supports student comprehension via interactive lessons that are more likely to adopt a constructivist approach. The results show that lecturers who apply student-centred constructivist or blended approaches are more likely to link these skills in their teaching, preparing students to function in the workplace. They reportedly believe this increases student-student and student-instructor interaction, resulting in an improved student-content interaction and subject comprehension. The lecturers described using ICT to communicate with students, as well as store and retrieve class material. The lecturers integrating ICT used constant feedback, enabling students to learn via discussions, idea clarification, and the evaluation of others' ideas since it supports communication and promotes a more constructivist approach. Often, the use of ICT makes students more communicative and more engaged in self-directed learning. This suggests a strong link between adopting a constructivist approach and using ICT to support students' communication by creating a classroom environment that emphasises the exchange of ideas and collaboration.

9.6.1.3 Easy to use

Numerous interviewees reportedly believe that digital educational technology is simple to use. An English lecturer who earned a master's degree in the UK stated, *'I use ICT in my teaching to assist students in learning a language. I use Keynote and an*

interactive whiteboard in the classroom because it is easy' (L15, English). Another lecturer with four years of experience said, *'ICT can save a lot of time and make it easy to prepare my lectures, and I can cover so much information in one class because of PowerPoint'* (L2, English). Keynote and PowerPoint were singled out for their ease of use by several lecturers; for example, *'I display my lessons on Keynote; it is very easy, which is like PowerPoint'* (L5, English), and *'I prepare every lesson using PowerPoint, and it is easy to use'* (L14, computer IT).

In this study, the data indicate that these lecturers' (i.e., L2, L5, L14, and L15) beliefs about the ease of using ICT in teaching and learning might affect its integration and adoption. This finding is consistent with TAM, which proposes that perceiving technology as easy to use is a contributory factor in its adoption.

Conversely, a technology's ease of use might encourage lecturers to adopt a positive attitude towards other types of ICT tools to support student learning and communication.

9.6.1.4 Behavioural intention

Positive intention is a significant factor in lecturers' ICT use, as one respondent noted:

Some programmes are difficult to operate, except for Word or PowerPoint, and they require much practice before use. For example, a colleague recommended Keynote to me. Keynote is like PowerPoint, and I downloaded it onto my iPad. It is amazing, but I am still learning how to use it effectively (L13, education).

This result implies there is a strong relationship between peer influence and positive intention. Lecturer L13 has a positive intention to learn how to use ICT and integrate it into her teaching, and perhaps, with the right pedagogical training, she will integrate other technologies into her teaching. Lecturers L8 and L11 voiced positive intention to receive ICT training: *'I'm keen to be trained how to integrate ICT in my teaching effectively'* (L8, education), and *'I'm really keen to integrate them in my classroom because I am aware of their benefits'* (L11, social science). These lecturers seem to be aware of the value of using ICT in their teaching and have a positive intention to integrate ICT into their teaching.

These lecturers' eagerness to be trained in ICT use indicates that positive intention is connected to ease of use or performance expectancy, demonstrating a high positive correlation between these two factors. Furthermore, social influence through lecturers sharing ideas with their colleagues and departments might influence and encourage other lecturers to adopt new ICT tools. This finding is consistent with the

UTAUT model, suggesting that social influence affects ICT use by lecturers, who could, in turn, influence the acceptance, adoption, and integration of technology by other lecturers and the university. Venkatesh et al. (2003) argued that behavioural intention is key to performance expectancy, effort expectancy, social influence, and conditions that facilitate the acceptance of ICT.

To summarise, positive attitudes toward ICT make lecturers more likely to adopt and integrate ICT into teaching. Lecturers need to understand the objective of ICT adoption and integration into university teaching. Positive attitudes toward and the acceptance of ICT are important because it needs to be viewed as advantageous by university lecturers and policymakers to expand the adoption rate. Similar ideas about positive attitudes and acceptance are highlighted in UTAUT (Venkatesh et al., 2003) and TAM, which share similarities in their conceptualisation. All these factors might promote the adoption of ICT at Jeddah University.

9.7 Competence and training in ICT use

Table 9.7 presents the lecturers' response to items concerning their competence and training in using ICT. On the item, 'I have the knowledge and skills needed to use ICT', roughly half of the lecturers (n=82, 51%) said they lack the knowledge and skills needed to use ICT, while 78 (49%) stated that they have these skills. In response to the item, 'I have limited experience with ICT', most of the lecturers (n=95, 59%) agreed, while 40 (25%) disagreed, and 25 (16%) were unsure about the statement. In regard to 'I have received training in ICT use', most of the lecturers (61%) reported not having any training. Only 56 (35%) lecturers claimed to have received training in ICT use. In response to the item, 'I have adequate technical support to use ICT', 145 (91%) lecturers responded that they do not have adequate technical support to use ICT. These findings suggest that most lecturers are unskilled and require training and technical support to use ICT in their teaching. Having limited experience with ICT prevents them from using it in their teaching.

Table 9.7: Competences and Training in ICT Use

Response	n(%)		
	Yes	No	Unsure
I have the knowledge and skills needed to use ICT.	78 (49%)	82 (51%)	0 (0%)
I have limited experience with ICT.	95 (59%)	40 (25%)	25 (16%)
I have received training in ICT use.	56 (35%)	98 (61%)	6 (4%)
I have adequate technical support to use ICT.	10 (6%)	145 (91%)	5 (3%)

The interviews with lecturers confirmed that they perceive a lack of competence and training in ICT. For example, lecturers stated, *'We need training in ICT to help us learn how to use it effectively to achieve the aims of our teaching'* (L4, education), and *'I would be better at using ICT if I had some training on how to do this. The university keeps telling us to use ICT, but they don't train us'* (L8, education). Another lecturer with four years of experience said,

The efficiency of ICT tools could be increased by giving proper training to senior lecturers who have been in the teaching field for the last 15–20 years. Moreover, more of the course content should be made available via ICT tools (L2, English).

During the interviews, the lecturers emphasised the need for training. Such training could help broaden the pedagogical culture within the university. The importance of training to learn new and innovative ways of teaching in higher education cannot be overemphasised, as one lecturer stated,

There should be adequate training for lecturers on the effective use of ICT tools during course delivery, and it would be better if the training course is offered at the university. It is important to develop lecturers' skills in ICT, as it is quite important in educational delivery nowadays (L13, education).

All the lecturers said they believe they did not have sufficient training in ICT use to support teaching. In the interviews, lecturers (as exemplified by the data above) showed a positive intention to undertake ICT training. The results indicate that if the teachers receive the necessary pedagogical training, they might integrate ICT into their teaching effectively. An exchange programme with foreign higher education institutions to receive training in ICT practices, as well as theory, might be useful. L13 suggested that training should be suitable for current technology to enhance Saudi lecturers' competencies. Consequently, the participant lecturers expressed the need to

be equipped with knowledge and skills regarding how to effectively integrate ICT into teaching and learning, stressing that such training should be university-based.

9.8 Summary

In summary, conflict was detected between the lecturers' beliefs and views on the use of ICT to support students' learning and communication, as well as in their practices and conflicting perceptions of how ICT is viewed compared to traditional/didactic classroom learning. Furthermore, evidence from the interviews sheds further light on this tension, which appeared regarding various factors, such as (1) pedagogical beliefs concerning ICT integration, (2) attitudes towards ICT integration, and (3) level of skills competence. Furthermore, the lecturers described the factors that cause tension with their views about ICT integration to support students' learning and communication. The next chapter is about understanding the factors that cause conflict between lecturers' beliefs and practices regarding ICT integration to support students' communication.

CHAPTER TEN

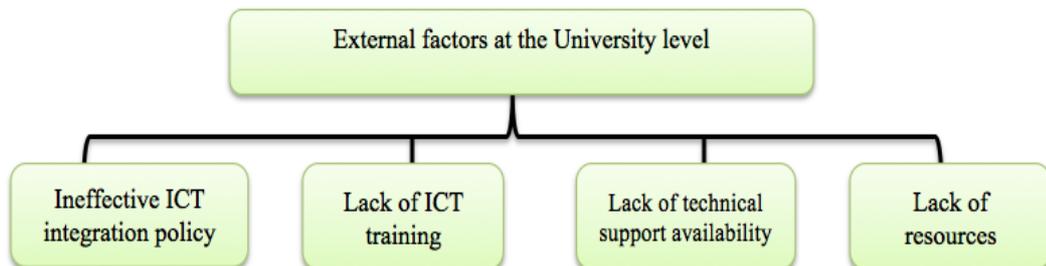
THE EXTERNAL FACTORS THAT MAY INFLUENCE LECTURERS' USE OF ICT TO SUPPORT STUDENTS' LEARNING AND COMMUNICATION

10.1 Introduction

The previous chapter presented the results related to the tension between lecturers' declared beliefs and practices regarding the use of ICT to support students' learning and communication, as well as the factors leading to such tension at the internal and individual level. The analysis in the current chapter aims to provide insight into the external factors that might cause this tension, focusing on issues at the university level. The quantitative and qualitative data are linked to gain further insight into lecturers' reported views and pedagogical beliefs related to the use of ICT to support students' learning and communication. A summary of the methodological triangulation concludes the chapter.

10.2 Theme: External Factors at University level

At the university level, several factors, such as ineffective ICT integration policy, lack of ICT training, lack of technical support availability, and lack of resources, all influence lecturers' integrated use of ICT (see Figure 10.1). Each of these factors is explored in turn.



Figuer10.1: External factors at the University level

10.2.1 Ineffective ICT integration policy

The questionnaire data explored issues posing potential barriers to using ICT to support teaching and learning. The greatest proportion of lecturers (n=155, 97%) strongly agreed the university has no clear policy regarding the use of ICT, while only 4 (2%) disagreed with the statement, as shown in Table 10.1.

Table 10. 1: Lecturers' Responses Regarding the University has a Clear ICT Policy

Response	n (%)				
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Lack of clear policy for the use of ICT	155 (97%)	0 (0%)	0 (0%)	4 (2%)	1 (1%)

The interview data are related to issues posing potential barriers to the use of ICT to support teaching and learning. During the interviews, the lecturers were asked whether the university has established a written policy for the use of ICT in teaching and, if so, what the policy is.

A lecturer with three years of experience said, *'I do not see any policy requiring ICT and have not been told about any policies like this'* (L15, English). Two lecturers with five years of experience said, *'I really do not know the university's ICT policy'* (L7, English), and *'We do not have any obvious policy about ICT'* (L13, education). These three lecturers (L15, L7, L13) do not know about the university's ICT policy, have not seen any formal documents about it since they began teaching at the university, and do not know if there is any related policy documents issued by the Ministry of Education. A lecturer with four years of experience said,

There is no written document as far as I know. This is my fourth year, and I have not come across any kind of ICT policy during my teaching at the university (L4, education).

Similarly, a lecturer with six years of experience stated, *'There is no written ICT policy document'*(L5, English). Two lecturers (L4 and L5) pointed out that despite having taught for several years at the university, they had never accessed or seen such a policy. It suggests that the lack of a clear, written ICT policy is an important factor that influences whether lecturers integrate ICT into their teaching to support student learning and communication.

A lecturer with six years of experience said,

There is no Saudi education policy about integrating ICT into the curriculum or how lecturers can integrate it into the curriculum, so there is no real guidance to follow (L11, social science).

Another lecturer with four years of experience stated, *'There are no clear structures or strategies about lecturers' roles in applying ICT tools in the classroom'* (L2, English). According to three lecturers (L8, L11, and L2), there is no clear policy, which places lecturers in the situation of having no guidance, making them feel unsure about how to

use ICT. For this reason, some lecturers (e.g., L8 and L3) explicitly identified the need for a clear plan and directive to be provided at the Ministry level.

A lecturer with five years of experience said, *'The Saudi Ministry of Education should hand the ICT policy guide to all university staff and explain it to them clearly (L3, computer IT)*. A lecturer with ten years of experience stated,

The university always asks us to integrate ICT into our teaching; however, there is no clear guidance on how we can use it, and most of us do not know how to employ ICT effectively in our teaching. I think the Ministry of Education should consider making a clear plan about using ICT and translate it into action (L8, education).

In summary, most of the lecturers did not know about the Ministry of Education's ICT policy and have not seen any related policy documents. These results are interesting because if the lecturers do not know the ICT policy, they will not apply it at the university level. The absence of a clear, accessible ICT policy for lecturers is reflected in their lack of strategies for integrating ICT. An ICT policy with specific guidelines is essential in guiding ICT integration because it would direct the lecturers in visualising the objectives and provide advice on ICT implementation methods. Without policies and guidelines, lecturers might be unaware of the ideas behind integrating ICT into education. Stakeholders and lecturers need to have a policy to follow that includes the objectives of integrating ICT. Moreover, the policy needs to include the detailed steps needed to achieve the objectives. Finally, all lecturers indicated that they have never read or seen any ICT policy since they began working at Jeddah University. This finding is in line with other scholars in Saudi Arabia, as discussed in Section 2.6 of Chapter Two. There is a lack of ICT policy strategies for translating it into action in Saudi higher education (Alamri, 2011). For example, Al-Madani and Allaafajjy (2014) stressed that the Saudi government should review its ICT policy.

10.2.2 Perceived lack of ICT Training

On the questionnaire, the participants were asked about possible barriers to using ICT, such as a lack of ICT training. The greatest proportion of lecturers (n=76 ,47%) agreed that they lack the necessary training to use ICT, while 26 (16%) lecturers strongly disagreed, and 1 (1%) lecturer disagreed (see Table 10.2).

Table 10. 2: Lecturers' Responses Regarding the Lack of Training as a Barrier to ICT use

Response	n (%)				
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Lack of training	50 (31%)	76 (47%)	7 (4%)	1 (1%)	26 (16%)

A significant sub-theme identified in the qualitative data analysis is related to the lecturers' ICT training. This finding emerged from interview responses when the researcher asked, 'What do you think prevents you from using ICT during your teaching to support students' communication?' Of the 16 lecturers interviewed, 13 (81%) stated that they lack training on ICT use. A lecturer with six years of experience said,

Some colleagues do not prefer to use ICT in their teaching; they do lecture. I really suggest a practical training course to show us [i.e., lecturers] how we can implement ICT in the classroom (L9, science).

Another lecturer stated,

They could give ICT training on various tools that we could use in our teaching. I really would be happy if I had the advantage of using ICT in my teaching (L2, English).

When asked about the need for ICT basic skills training, 6 (37%) agreed that it is a need. One lecturer said,

I suggested that ICT training needs to include basic technology skills training for the implementation of ICT, and this remains weak because some lecturers do not know how to use it. Because we have problems with training, we are unqualified (L12, mathematics).

Regarding the need for training in the pedagogical application of ICT, 8 (50%) lecturers agreed that it is needed. For example, Lecturer L5, who has six years of experience and teaches English courses, said,

It is important to train lecturers exactly how to use ICT in their teaching effectively since basic knowledge of ICT tools can be easily gained, such as how to open Word or create a PowerPoint slide, but the difficult part is how to employ it in our teaching.

According to another lecturer with four years of experience,

Ideal ICT training needs to include not only computer-based but also pedagogical training. Additionally, it must include seminars that help

lecturers prepare ICT materials for teaching particular university subjects (L10, science).

Of the 16 lecturers interviewed, 13 (81%) agreed that training need to be given sufficient attention and an adequate budget. For example, a lecturer with five years of experience stated,

I do not use ICT, as I don't have the required knowledge. My knowledge is very basic. However, I believe that using ICT will be simplified, and my class will find it entertaining, I think the university should organise seminars, short courses, and workshops on ICT integration into the teaching process as it is crucial to introduce lecturers and other educational leaders to workshops and seminars on technology-based learning and teaching. There should be adequate training for lecturers on the effective use of ICT tools during course delivery. It is important to develop skills in ICT as it is quite important in educational delivery. There should be an adequate part of the budget dedicated to the development and procurement of ICT tools in the university's courses (L13, education).

Furthermore, 11 (68%) of the lecturers interviewed agreed that specialists and experts who understand how integrating ICT in subject-specific curricula should give training. One lecturer suggested that

'We need good training on how we can integrate ICT into our teaching not only in general but also in specific subjects and for ICT specialists to visit the university and train us during the university day on how we can use an interactive whiteboard and other ICT tools (L3, computer IT).

While most of the lecturers said they wanted training, there were provisos, such as the need for qualified trainers:

They can offer training compatible with the current curriculum, and the university could provide specialist trainers who have resources and who can train the lecturers. Specialist trainers could deliver the training and be in accordance with contemporary pedagogical perspectives (L7, English).

Nevertheless, despite the acceptance of the need for training and the real desire for it expressed by lecturers, there was also a perception that the pressures of work and time constraints make it difficult to incorporate training into the lecturers' schedules.

Of the 16 lecturers interviewed, 11 (68%) agreed that *the 'lack of time for training hinders technology use'* (L16, English).

Most of the lecturers noted that they lack the necessary training to use ICT effectively in their pedagogy, beyond basic technology skills. The lecturers indicated they need training to help them understand how ICT could be applied in their teaching practice effectively. Moreover, lecturers mentioned that they need experts who have applied ICT effectively to train them. Lecturers raised a number of issues regarding the lack of training quality, and the need for qualified trainers. Additionally, lecturers commented on the importance of pedagogy training to employ ICT productively. They want specialised training, particularly in integrating ICT, to be able to use it and consider the current ICT training of academic staff to be insufficient. They described the current training as too general in nature and is not taught by qualified experts in ICT.

These results suggest that the lecturers' reportedly low to average ICT skills might be why they only use ICT on a limited basis in their teaching. Every lecturer emphasised the need for training workshops concerning ICT use and computer applications. Moreover, training workshops could help broaden the pedagogical culture within the University. Training is perceived as an enabling factor that can support lecturers in their attempts to integrate ICT into their teaching to support student learning and communication. A suggestion that arises from the results is that communication channels between the Ministry of Education and lecturers could be more open regarding the need for specific pedagogical training.

The responses reveal a perception that training programmes are designed with the aim of introducing basic ICT skills, whereas lecturers need to enhance their pedagogical and technological skills beyond the basic level. Notably, the TPACK model highlights lecturers' needs for pedagogical and technology skills in order to use ICT effectively, which suggests both kinds of skills should be the focus training. Moreover, lecturers suggested the importance of professional training on how to integrate ICT into their teaching effectively and increase their technical knowledge and skills. ICT will likely not be used unless the lecturers have appropriate training to use it effectively in teaching (as suggested in the UTAUT model). These results are consistent with a study conducted in the US (Nelson et al., 2019), as reported, if lecturers are not provided training, they may be unable to integrate ICT into their teaching practice, and it will be more difficult for institutions (i.e., universities) to integrate comprehensive ICT-based instruction approaches.

Overall, from questionnaire and interview data, it is clear that there is a lack of adequate ICT training, and most of the lecturers agreed that it hinders their ability to

integrate ICT into classroom instruction to support student learning and communication.

10.2.3 Perceived lack of technical support availability

When the participants were asked about barriers to using ICT, the lack of technical support was mentioned. On the survey, the vast majority of lecturers (n=149, 93%) strongly agreed that there is a lack of technical support, while 5 (3%) lecturers strongly disagreed, and a small proportion (n=1, 1%) disagreed.

Table 10.3: Lecturers' Responses Regarding the Lack of Technical Support as a Barrier to ICT Use

Response	n (%)				
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Lack of technical support	149 (93%)	5 (3%)	0 (0%)	1 (1%)	5 (3%)

These results were confirmed by the interview responses when the researcher asked, 'What do you think prevents you from using ICT in your teaching and learning?' Most of the lecturers stated that the university does not have a technician to resolve technical problems, and it prevents them from using ICT in the classroom. Of the 16 lecturers interviewed, 9 (56%) remarked that some interactive whiteboards were not used because they require a technician to set them up:

The lack of technical support discouraged me from using the interactive whiteboards provided by the Ministry of Education, and the time in the classroom is important for the students; I do not want to waste it in dealing with technology (L3, computer IT).

Lecturer L3's sentiments were echoed by three other lecturers in different disciplines:

Some interactive whiteboards are new but are not working because no one has performed the setup. If I had the technical skills or the university gave us some technical courses to fix small issues, that would be great (L9, science).

The unavailability of technicians makes many lecturers avoid using the available devices. It will be very embarrassing if I do not know how to fix the projector, but my students do (L12, mathematics).

Many times, I have used the interactive whiteboard, and it suddenly stopped working, and no one has come to fix it. The lack of technical support may lead to lecturers avoiding ICT (L4, education).

Eleven lecturers suggested the need for a female technician. As one explained,

[We need] the availability of a female technician in the university to help lecturers when they face technical problems and to solve them quickly without delay because when we asked for a male technician, he must come at the end of the day, later in the week, or, sometimes, they do not come, and we have a lot of technical problems in the classroom. Some interactive whiteboards are not working, but no one comes to resolve the problem (L10, science).

According to another lecturer, *'[We need] a female technician to help us with problems we face while using ICT tools in the classroom or computer lab (L6, computer IT)*. Ten (62%) of the 16 lecturers interviewed suggested providing high-quality ICT training. One lecturer stated, *'It is very important for the lecturers to get high-quality ICT skills to integrate ICT into classroom teaching and learning practices (L15, English)*, and another said, *'I think lecturers should have professional training to troubleshoot and fix minor technological problems they face while they using ICT in their teaching, especially lecturers who do not teach IT-related courses' (L14, computer IT)*.

The lecturers stated that the availability of technical support is a priority when considering the use of ICT in teaching. The lack of technical support might cause additional stress for the lecturers and interrupt classroom instruction, which is consistent with the UTAUT (Venkatesh et al., 2003). For example, when encountering ICT-related problems in the classroom, lecturers are helpless in front of their students, which can be embarrassing. All the participants regarded the lack of technical support as a barrier, which affects lecturers' confidence because they fear embarrassing themselves in front of the students or experiencing technical problems they do not know how to fix. This result is in line with Kozma (2008), who stated that lecturers would not have any interest in using ICT if they feel they will face many technical problems that are difficult to fix. This might suggest that why the Ministry of Education does not hire female ICT technicians at Jeddah University to assist female lecturers with their integration of ICT, as well as lecturers recognising the significance of the technical skills required. Thus, the significance of technical support to the success of ICT integration in the university should not be as much of an issue in the future to the success of ICT integration. Giving lecturers adequate technical support is essential for the sustainable adoption of ICT in their teaching (Yilmaz, 2011; Ghavifekr et al., 2016). Moreover, the majority of lecturers recognised the importance of providing professional and high-quality ICT training as it would be beneficial to

adopting and accepting ICT in their teaching to support student learning and communication. This finding is in line with Bingimlas (2009) argued that technical support and an important level of skills needed to have the full potential of ICT in teaching and learning. However, lecturers need to acquire not only general technical skills but also more subject-specific technical knowledge (Mishra & Koehler, 2006). Therefore, to facilitate integrated ICT in the classroom, lecturers need a comprehensive knowledge of pedagogy, technology, and content; these three elements interact with each other to help lecturers understand and use ICT tools in pedagogy effectively to enhance content delivery. If the lecturers have knowledge of all three elements, they will be in a better position to integrate ICT into their teaching activities to support student learning and communication.

10.2.4 Perceived lack of resources

Table 10.4. shows that most lecturers who responded to the questionnaire perceived a lack of necessary ICT hardware and software in Arabic, causing a barrier to using ICT. Fifty-four (34%) of the participants strongly agreed that they lack the necessary ICT hardware and software in Arabic, while 56 (35%) agreed, 30 (19%) disagreed, and 20 (12%) strongly disagreed. Most respondents strongly agreed (n=55, 35%) or agreed (n=43, 27%) that slow or no Internet access is a problem. Only 4 (2%) were unsure, whereas 32 (20%) disagreed with the statement, and 26 (16%) strongly disagreed.

Table 10. 4. Lecturers' Responses Regarding Internet Access and Hardware/software Availability in Arabic

Response	n (%)				
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Lack of hardware and software in Arabic	54 (34%)	56 (35%)	0 (0%)	30 (19%)	20 (12%)
No or slow Internet access	55 (35%)	43 (27%)	4 (2%)	32 (20%)	26 (16%)

These findings are supported by the interview data, as lecturers complained of a lack of hardware and software in Arabic and poor Internet connectivity. Notably, many lecturers mentioned several barriers that contributed to their reluctance to use ICT. For example, lecturers saw the lack of ICT tools as a major obstacle to ICT use. Seven lecturers agreed that ICT is available but claimed there are technical issues, such as a lack of suitable computer software and hardware, poor access to the Internet, as well as a lack of interactive software and devices in classrooms, such as interactive

whiteboards and well-maintained computers. Three lecturers in different disciplines stated,

The lack of hardware and devices is a big problem, and all the software is not updated. The interactive whiteboard doesn't work because there is no clear guidance on how lecturers can use it (L9, science).

Another lecturer,

We do not have many computers at the University, such as laboratories and computer rooms, and I bring my own Wi-Fi into the classroom to overcome the Internet barrier (L7, English).

Another lecturer,

I bring my own Wi-Fi into the classroom (L14, computer IT).

Another lecturer, who complained about the impact of connectivity problems, stated, *The lack of the Internet makes me quite embarrassed and irritable because we waste so much time trying to connect to the Internet, so I bring my own Wi-Fi (L15, English).*

Most of the lecturers identified the lack of hardware and software in Arabic and agreed that software available at the university is not updated. Moreover, it is revealed that many lecturers have not integrated ICT because of the lack of resources and guidance on integrating ICT into courses in their specific discipline.

A stable Internet connection is needed if students are to use it to communicate with lecturers or perform online tasks. Lecturers, such as L15 above, who rely on the Internet to present lectures, found that a barrier to access or slow connectivity considerably hinders the use of ICT to support students' learning and communication. It appears the main reason for not using ICT at universities in Saudi Arabia is inadequate access to technology because most Saudi universities still lack wireless connections or have poor-quality connections. Lecturers and students need a reliable Internet connection to complete online group tasks, and lecturers might need it to supervise learning. However, L7, L14, and L15 reported bringing their own Wi-Fi access with them into the classroom, so the lack of a wireless connection is not stopping some lecturers from using ICT in their teaching activities. The lecturers who are not using ICT in the classroom may use the lack of resources as an excuse for not incorporating ICT into their teaching activities in the classroom. The Saudi government should pay more attention to providing universities with suitable Internet

connections and suitable environment, as well as training lecturers in the technological knowledge and skills needed in the 21st-century classroom. Despite the large budget allocated to education, as discussed in Section 2.3 of Chapter Two, it is not reflected in the portion allocated to Saudi universities' ICT equipment.

10.3 Summary

The results in this chapter support the lecturers' claims of a number of barriers impeding the use of ICT to support students learning and communication in their teaching practice. This chapter has presented an analysis of questionnaire and interview responses related to external factors at the university level that inhibit lecturers from using a constructivist approach and integrating ICT into classroom instruction, such as

1. Unclear ICT integration policy
2. Lack of training
3. Lack of available technical support
4. Lack of resources

These factors appear to be contributing to the complexity and difficulty of the situation, which is already marked by tension related to the views, strategies, and pedagogical beliefs of the lecturers. These issues may prevent lecturers from using ICT since they cause them to have a relatively negative attitude towards using ICT in their courses. The next chapter will demonstrate the need for considering a broadening of pedagogical beliefs in supporting students' learning and communication. It will discuss the findings of this and the previous chapter, along with the literature review, addressing the research questions, and examining the overarching themes in greater detail.

CHAPTER ELEVEN

DISCUSSION AND INTERPRETATION OF KEY FINDINGS

11.1 Introduction

The previous chapters presented the study's findings related to the lecturers' reported use of ICT to support students' learning and communication. The purpose of this chapter is to discuss and interpret these findings with reference to the original research questions. Thus, this chapter explores the views of lecturers working at Jeddah University regarding their beliefs and, sometimes, **conflicting views and tensions relating to the use of ICT to support students' learning and communication. However, their reported practices revealed contrasts and tensions when compared with their espoused beliefs.**

The chapter is divided into two sections; the first section provides answers to the research questions, along with relative evidence from the results chapters, and the literature. The second section discusses the research findings in relation to the body of literature. Beginning with the answers to the study's research questions, which revealed interesting and significant results, this chapter discusses and interprets these results in relation to the existing literature. The results could be used to contribute to an understanding of the main issues surrounding lecturers' use of ICT to support students' communication.

The main research question:

What are the main issues around lecturers' use of ICT to support students' learning and communication?

Sub-Research Questions

- 1) What are lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?
- 2) To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?
- 3) Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

11.2 Addressing the research questions

This section examines the research sub-questions.

11.2.1 What are the lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?

The study's first sub-research question aimed to explore the lecturers' pedagogical beliefs regarding the use of ICT to support students' communication. Data used to answer this question came from the questionnaire and interview results, as presented in Chapters Eight, Nine, and Ten. Interview data in Section 9.4 on pages 183-184 showed that lecturers had different preferred pedagogical beliefs, as some preferred a teacher-centred approach informed by behaviourism, some preferred a student-centred approach informed by constructivism, and others seemed to prefer a blended approach.

After analysing the interview data presented in Section 9.5 on page 192, three groups of lecturers can be identified based on their chosen pedagogical approach with ICT. The first group of lecturers previously used ICT and a constructivist approach in their teaching but have stopped using it because of the issues they face. One possible explanation is that these lecturers feel they lose control over the classroom when teaching with a constructivist approach. They may do so when needed and when the conditions permit; however, they appear to feel insecure. Another possible explanation is that these lecturers may feel stressed or overloaded. The third possible explanation is that in Saudi culture, students prefer to play a passive role during classroom instruction. Such behaviour is likely to be the recall of their experiences of teacher-centred approach at previous stages, before they entered university. However, all of these possible reasons are speculations because there is no empirical evidence due to the lack of observational data.

The second group of lecturers use ICT but only to deliver content to students. Their beliefs are teacher-centred, and they do not want to change their practices, as they believe it to be the most effective way to teach, as discussed in the results presented in Section 9.5 of Chapter Nine. Some of the lecturers seem to have a negative view of using ICT in teaching. They appear to feel that the use of ICT is a waste of time, that they would lose control over students, and might feel that using ICT would make them fail to deliver the lessons and finish the curriculum on schedule.

The third group of lecturers is unsure about integrating ICT into their classroom practice. However, they anticipate using ICT at some future time when the

current obstacles are easier to overcome. One of the obstacles is the lecturers' self-reported lack of knowledge, skills and pedagogical training related to ICT.

In summary, it seems that most of the lecturers have positive views on using ICT to support students' learning and communication. However, differing views because lecturers face many issues when deciding whether to adopt it in classroom instruction or contemplate using it in their teaching. Perhaps, some lecturers prefer to employ a teacher-centred approach and the issues they face cause tension between their beliefs and reported practice. These issues are a lack of ICT skills and knowledge, loss of control in the classroom, and feeling stressed and overloaded. Personal limitations negatively affect lecturers' pedagogical decisions related to the use of ICT to support student communication in the classroom, as do external factors, such as the lack of training.

11.2.2 To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?

The study's second sub-research question aimed to identify the extent to which lecturers' pedagogical beliefs might influence their practice in the use of ICT to support students' communication. In this study, most respondents stated that they had adopted constructivist beliefs about teaching and learning, but such a view is only slightly reflected in what they claimed to do in class. From the analysis in Section 9.3 of Chapter Nine, on page (175), associations were identified via Spearman's rho correlations between the lecturers' beliefs and teaching activities in Table 9.2. The self-reported data indicate that the lecturers' actual preference is for using didactic activities in their teaching. The analysis presented Cross-tabulation in Section (9.3.1), on page (181), the Cross-tabulation (chi-square test) results displayed in Table 9.5 support the view that large group discussions and other constructivist activities are not commonly practiced in courses taught at Jeddah University.

One possible explanation for the tension between declared beliefs and reported practices could be that the lecturers stated they believed in newer methods of teaching because that was the response they perceived to be expected. It is worth noting that the lecturers' claimed a preference for traditional methods over more student-centred approaches and reportedly avoid using some teaching activities, such as classroom discussions and group work, which tend to support students' communication.

There is, moreover, a possibility that Saudi culture influences the lecturers' pedagogical beliefs regarding what they claimed to do in the classroom in ways that

are reflected in Hofstede's (2008) cultural model, which was discussed in Chapter Two. According to Hofstede's model, Saudi culture has large power distances, strong uncertainty avoidance, and collectivist and masculinity characteristics. This view is supported by the research results, showing that some lecturers prefer to have greater control the students and teaching and may feel less comfortable supporting student communication. Therefore, Saudi culture favours a teacher-centred approach. Hofstede's cultural model continues to have relevance in educational technology research related to TAM and UTAUT by providing insight into the issues that lecturers might face when using ICT in their teaching practices. For example, related to Hofstede's claim that Saudi culture has a large power distance, in a classroom setting, the lecturer assumes the role of a parent figure with authority as the sole proprietor and dispenser of knowledge. Students have no voice to question this authority and bear little responsibility in the learning process. This power distance, therefore, plays a central role in how teaching and learning strategies are selected. In a collectivist culture, the most valued outcome among students is to earn certificates and high grades more than any other skills, such as communication, and the masculinity aspect of Saudi culture leads lecturers to encourage students to compete in their classes.

In addressing the question of whether lecturers' pedagogical beliefs may influence their practice in the use of ICT to support students' learning and communication, although the majority of lecturers in this study claimed to hold constructivist views towards learning, their reported practices do not necessarily reflect this. A number of factors were identified as possibly influencing the nature of their practices. These are discussed in more detail in addressing the third sub-research question.

11.2.3 Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

The study's third sub-research question is intended to explore the factors that may influence lecturers' use of ICT to support students' learning and communication. These factors include lecturers' background characteristics, as well as their pedagogical beliefs, attitudes toward ICT, perceived ICT competence, and other external factors in the broader environment, such as the lack of technical support.

11.2.3.1 Lecturers' characteristics and academic background of ICT use

The study participants, who are described in Section 8.2.1.3 of Chapter Eight on page (157), are mostly female, young, highly qualified, and less experienced. This might be because younger lecturers with less teaching experience require more time and effort to get familiar with the use of ICT. This is a common conclusion of other studies (e.g., Woodrow, 1992; Rogers, 2003; Venkatesh et al., 2003; Buabeng-Andoh, 2012b; Sariçoban, 2013), which are discussed in Section 4.3.1.1 of Chapter Four on page (72). However, it could be argued that younger lecturers might be more enthusiastic and knowledgeable about technology and be more inclined to use ICT than older lecturers. Most lecturers at Jeddah University are younger because when the university separated from King Abdul-Aziz University in 2014, most of the older lecturers remained there.

The study has shown, in Section 8.2.1.4 of Chapter Eight on page (159), that the academic background characteristics that appear to most affect lecturers' use of ICT are the lecturers' academic background and previous ICT use. The findings indicate that the tensions between belief and practice linked to lecturers' academic backgrounds and subject disciplines may constrain them from using ICT to support students' communication. Fifteen participants, who taught mathematics, might feel that ICT is unnecessary, and supporting student communication is not important. As was discussed in the literature review in Section 4.3.1.1 on page (74), a number of authors, such as Salteh and Sadeghi (2015), Onansanya (2010), Orji (2010), and others, have argued that educators' academic subject specialisations appear to be associated with their differing attitudes towards ICT use. The results of this study indicate that lecturers in some academic disciplines, such as languages and the humanities, mostly use ICT in their teaching to support students' learning and communication, which might be due to the nature of the subjects. In contrast, in the natural sciences, lecturers focus on conveying facts and theories, which give lecturers less space to support students' communication.

11.2.3.2 Lecturers' perceived ICT attitudes and competence toward ICT use

The study has shown, in Section 9.6 and Table 9.6, on page (196) that lecturers can be divided into three groups based on their attitude toward ICT use in the classroom: positive, negative, and neutral. The study explored the lecturers' attitudes towards ICT integration into teaching and learning to support students' communication. A considerable number of the lecturers (n=94, 59%) hold positive attitudes; they were

willing to integrate ICT into their teaching because they recognised its benefits in teaching, such as providing students with the knowledge and skills needed in the 21st-century workforce, such as communication. However, 28 (17%) of the lecturers hold negative attitudes toward ICT because, they claimed, using ICT in classroom teaching is time-consuming. On the questionnaire, a considerable number of lecturers (n=103, 65%) reported that a lack of knowledge and skills hinders them from using ICT, and during the interviews, some lecturers expressed that they do not use ICT because they do not know how to use it effectively. This finding is consistent with a considerable body of research in other regions of the world, as discussed in Chapter Four (e.g., Teo, 2008; Eickelmann & Vennemann, 2017; Hue & Ab Jalil, 2013; Sariçoban, 2013; John, 2015; Hismanoglu, 2012; Jimoyiannis & Komis, 2007). Lecturers appear unwilling to use ICT and reportedly hold a negative view of ICT because they think using ICT requires a lot of time to preparing lessons or perceive a lack of access to educational technology. This finding is in line with Hismanoglu (2012), who explored the perspectives of lecturers in the higher education system as they relate to ICT implementation in teaching English courses. The study reveals that lecturers have a negative attitude towards ICT in their teaching because they do not feel that they have adequate skills and training to use it and view ICT as a waste of time.

In this study, the third group of lecturers holds neutral views on using ICT in teaching. In the questionnaire data, 26 (16%) lecturers were unsure whether ICT plays an important role in teaching and learning. This result is in line with a study conducted by Jimoyiannis and Komis (2007), which examined lecturers' attitudes toward ICT, as discussed in Section 4.3.1.3 of Chapter Four on page (77).

It can be concluded that if lecturers have a positive attitude toward ICT, then they are more likely to accept, adopt, and integrate ICT into their teaching practices. These results support the TAM model. Davis (1989) also agreed that if lecturers have a positive attitude, they might be more likely to accept and adopt ICT in their teaching.

The study has also shown, in, in Section 9.7 and Table 9.7, on page (204) that the lecturers perceive that they received basic ICT training (e.g., in operating a computer or searching the internet) instead of training in the pedagogical aspects of ICT use. Therefore, the results of this study reveal that conflicts and tension between the lecturers' beliefs and reported practices are, sometimes, linked to their self-reported lack of competence and skills in using ICT. As the data show in Table 8.7, on page (163) most of the lecturers in this study rated their computer skills as average or

limited. Inadequate training explains the lecturers' perceived limited knowledge and, consequently, their low level of effective ICT use. Such an interpretation is supported by the current study's findings, where lecturers describe their knowledge and competencies. This finding is unsurprising since there is a substantial body of research emphasising the importance and influence of training courses on the development of teaching skills (Al-Alwani, 2005; Hew & Brush, 2007; Buabeng-Andoh, 2012b). The lecturers lack confidence because their ICT training only focused on basic skills, such as the functions of a device or application; thus, it did not produce enough pedagogical understanding for lecturers to use their knowledge in teaching. The training programmes failed to pay attention to the pedagogical aspects of educational ICT use. Such an omission is a matter of concern since the TPACK theory proposes that lecturers require technological, pedagogical, and content knowledge instead of general technical competence (Mishra & Koehler, 2006). Such a narrow view of teaching practices restricts the lecturers' skills, making it difficult for them to use innovative alternatives to traditional teaching methods (Zhao et al., 2002; Ertmer et al., 2012).

It is clear that there is a requirement in Saudi higher education for spending on various learning, teaching, and assessment methods adapted to meet individual student requirements and support curriculum components. These findings emphasise the critical nature of providing ICT resources to these academics with more effective education and training in the application of ICT.

11.2.3.3 External barriers are related to the lecturers' ICT use

This discussion is related to external factors, such as the perceived lack of ICT policy, perceived lack training, perceived lack technical support and perceived lack resources. These factors are connected to the research context, such as policy and culture, because they reflect the broader educational culture. The importance of ICT in Saudi Arabia remains underestimated, hindering the implementation of newer plans and initiatives. The study has shown, in Section 10.2.1 and Table 10.1 on page (208) the perceived lack of ICT policy, this study emphasises factors inhibiting the translation of ICT policy into action.

Also, lecturers' views of ICT use could be related to external barriers, such as a lack of ICT training that might influence their attitudes toward ICT. The study reveals, in Section 10.2 and Table 10.2 on page (210) that most of the lecturers feel they would benefit from pedagogical training as it could help them broaden the pedagogical culture within the university.

Some lecturers in the study (see Section 10.2.3 and Table 10.3 on page (213) said that they had encountered frequent technical problems when using ICT resources, which were not promptly fixed. The study has also shown, in Section 9.5.3, of Chapter Nine on page (195) that some lecturers indicated they do not use ICT much due to time constraints. Lecturers want to finish covering the curriculum and prepare students for examinations by the end of the term. Therefore, it is difficult for most of them (n=10, 62%) to be creative and design ICT activities to support students' learning and communication. These results are in line with many previous studies that have identified time restrictions and difficulty in scheduling sufficient class time as a hindrance to teaching using ICT (Arokiasamy, 2012). A significant number of researchers have stated that time limitations and difficulties in scheduling enough computer time for a class are barriers to lecturers' ICT using in their teaching (Al- Alwani, 2005; Zare-ee,2011). In the current study, some lecturers remarked that their curriculum is extensive and that their classrooms are overcrowded, making it difficult for them to find a good opportunity for students to use ICT in class. Some stated that, on average, they teach about 35-45 students per class. These issues seem to influence whether lecturers have the time to integrate ICT into classroom instruction.

As shown in Section 10.2.4 and Table 10.4, on page (215) lecturers' negative views regarding ICT use could be related to a lack of ICT resources, which affects lecturers' attitudes and their willingness to integrate ICT into their classroom teaching. A common assumption when providing technological resources in a university setting is that lecturers are well equipped to use them. However, it is important to note that having the technical know-how to use technology is simply not enough; lecturers also need to know how to use the resources at their disposal to meet their students' needs and employ a variety of pedagogical strategies to meet certain objectives in the curriculum, such as enhancing communication. The following section presents a discussion of the key findings that emerged from the data analysis of both the questionnaire and interview responses in the current instrumental case study as they relate to the literature review.

11.3 Discussion of key findings related to the literature review

In this section, the key findings emerging from the results are discussed in relation to the literature review. This study aimed to gain deeper insight into the main issues surrounding lecturers' use of ICT to support students' learning and communication.

The main issues surrounding lecturers' pedagogical beliefs were investigated, as well as various factors that influence whether lecturers use ICT in their teaching to support students' communication. The main findings presented in Chapters Eight, Nine, and Ten are discussed and interpreted in relation to the literature review.

11.3.1 Lecturers' pedagogical beliefs

Two pedagogical approaches referred to in the literature are generally applied in education: a teacher-centred approach (informed by behaviourism) and a student-centred approach (informed by constructivism). Sometimes, lecturers blend these approaches to take advantage of the benefits of both approaches. The teacher-centred approach, the lecturer typically takes the role of an instructor, who transmits information to students, and directs their actions. By contrast in a student-centred approach, the lecturer is more of a facilitator provides students with the opportunities to contribute actively in teaching-learning process.

The results from the interviews with lecturers indicate that the teacher-centred approach to teaching is commonly used because the lecturers' views of teaching methods are influenced by the university's emphasis on students achieving high grades. Some of the lecturers indicated they use different activities during their teaching activities, such as group work and paired activities, for numerous reasons.

Mishra and Koehler (2006), suggest that the lecturers' decision to apply a particular teaching method will be influenced by his or her subject content knowledge and pedagogical beliefs. The findings from this study indicate that lecturers' pedagogical beliefs might be influenced by their academic backgrounds and more might influence their choice of teaching method. This result suggests that some lecturers are very interested in looking for different teaching methods, such as the lecturers who blend the teaching approaches together to support students' learning and communication.

As discussed in Section 2.4.2 of Chapter Two, on page (29) typically, in the Middle Eastern classroom, learning is teacher-centred and characterised by rote learning and dictation (Tubaishat et al., 2006; Chadraba & O'Keefe, 2007). For example, according to Tawalbeh and AlAsmari (2015), in most Saudi universities, lecturers are prone to using the teacher-centred strategy, talking throughout almost all of the lesson while students remain passive, waiting to gain knowledge without participating actively in interactions with each other or the lecturer (Idris, 2016). Many learning institutions still use the teacher-centred strategy in which students are passive;

students listen to the information provided by the lecturer and write it down. In Western countries, such as the US and UK, pedagogy and assessment systems have developed in more varied ways, underpinned by a range of learning theories, with the aim of providing students with an in-depth understanding of the course concepts (Chadraba & O’Keefe, 2007).

In contrast, in Saudi Arabia, most university students attended public secondary schools and, like many of their lecturers, have an educational background that focuses on teacher-centred passive learning and mainly involves lecturers explaining concepts and reading from textbooks (Rugh, 2002; Burt, 2004; Alebaikan & Troudi, 2010a; Alamri, 2011; Allamnakhrah, 2013; Tawalbeh & AlAsmari, 2015; Idris, 2016).

The methods and activities commonly used are inadequate for supporting communication in the current era, in which soft skills, such as communication skills, are important criteria for employment. Educational researchers, such as Flores Alarcia and de Arco Bravo (2012), Yusoff et al. (2013), and Sweetman (2017), have proposed an integrated student-centred collaborative learning environment that can be effective in helping to develop students’ communication skills. By examining the results more broadly, it can be seen that most of the lecturers in this study hold positive views toward ICT and a constructivist view of teaching. However, their reported practices conflicts, contrasts and tensions with their espoused beliefs. It seems that they may have misunderstood the constructivist approach, which focuses on deep understanding and learning. This result is in line with Al-Maqtri (2016), discussed in Section 2.4.2 of Chapter Two on page (28), who claimed that most Saudi lecturers are unaware of or misunderstand the student-centred constructivist approach. It is also in line with Gordon’s (2009) findings, as discussed in Section 3.6 of Chapter Three.

In summary, the study results reveal that some lecturers claimed not to use one particular teaching technique and, instead, use a combination of various teaching methods. The quantitative data from the questionnaire reveals that lecturers reported following a teacher-centred approach and tend to deliver lectures and presentations in their classroom instruction. In addition, during the interviews, the lecturers discussed different teaching methods and why they preferred to use a teacher-centred approach during their teaching, even when they claimed to have positive beliefs regarding the student-centred approach. The teacher-centred approach was dominant.

11.3.2 Lecturers' pedagogical beliefs and use of ICT

The first-stage (i.e., the questionnaire) findings of this study are an overview of the lecturers' views. As discussed in Section 9.4.1.1 on page (185), the lecturers' total ICT use (e.g., videos, YouTube, PowerPoint, and the Internet), as well as the more standard audio-visual aids, is limited. This research shows that the participants reported that they mainly use ICT as a ways to display PowerPoint slides, videos, and pictures. Qualitative data analyses of the interview responses indicate that every participating lecturer reported they primarily focus on using projectors to deliver information to the class. Only two of the lecturers stated that they use other devices, for example, interactive whiteboards. As discussed in the literature review in Section 3.3.3 on page (44), a number of researchers, such as McFarlane and Sakellariou (2002), Kozma (2003); Adewoyin, 2009; Davidson (2012) and Ewe et al. (2017) have found that most lecturers use ICT primarily to teach using conventional methods (e.g., lecture slides). One example of a teaching activity is the flipped classroom, discussed in Section 3.4.2.2 of Chapter Three on page (54). A study conducted by Filatova (2015) to investigate the flipped classroom method and found that it improves student performance. The concept of the flipped classroom, which supports student participation and interaction, is particularly relevant to the current study. Ottenbreit-Leftwich et al. (2010) found that using videos to explain scientific concepts to students increases their comprehension. However, Setren et al. (2019) found that the flipped classroom has no strong effect on students' learning. The results of using the flipped classroom faded out after a while when the exam finished. Additional analyses of the qualitative interview data, where the primary intention was to understand how lecturers implement ICT, indicate that when ICT is implemented in the classroom, it is within a traditional teaching approach.

Most importantly, a move to a student-centred ICT-facilitated approach would involve evaluating and reorienting the focus of the lecturer-training curriculum. It could seem to be an uphill task, as there is an implicit suggestion of a shift in ideology. However, this thesis is investigating the main issues surrounding lecturers' use of ICT to support students' learning and communication. This discussion naturally leads to evaluating how facilitating lecturers' use of ICT might be advantageous in steering universities toward broadening the pedagogical culture. Lecturers utilise ICT inside and outside of the classroom for teaching. For instance, the lecturers reportedly use the WhatsApp social media platform to communicate with colleagues and students, and

this result might conflict with the Saudi culture's large power distance, as it applies to Hofstede's model (see Chapter Two on page 33). However, Hofstede's model is more than 30 years old, Saudi culture has been changing gradually over this time period, and the dramatic advances in technology and communication in recent decades might reduce the power distance between lecturers and students.

11.3.3 Tension between lecturers' pedagogical beliefs and classroom practices

The analysis of data collected during the interviews, presented in Section 9.3.1, reveals some tension between the lecturers' pedagogical beliefs and their reported practices. The discrepancy between lecturers' beliefs and their classroom activities was apparent in the exploration of how they tried to support student communication. The tensions arise as a result of various factors that constrain the lecturers' ability to reflect their beliefs in teaching practices, has been shown in research investigating on the relationship between beliefs and classroom practices (e.g., Windschitl, 2002; Krahenbuhl, 2016; Corkin et al., 2019). Individual, interpersonal, and institutional or external factors might influence lecturers' choice of pedagogy in their teaching.

Individual factors

The data analysis of the interviews, presented in Section 9.5.1, on page (192) reveals two individual factors: being stressed and control. Most of the lecturers reported feeling stressed and overloaded by many tasks. Moreover, external factors, such as a heavy curriculum and the need to finish it in a short period of time, cause tension and conflict between pedagogical beliefs and classroom practices. This finding is in line with those of other studies (e.g., Gilakjani et al., 2013; Ahmad et al., 2015), as discussed in Section 3.6 of Chapter Three.

The second individual factor is related to lecturers seeming to avoid using a constructivist student-centred approach because they feel that a lot of talking and discussion in the classroom make them lose control of the classroom setting. This result is in line with Gordon (2009) and Haney and McArthur (2002) However, Gordon (2009) found that lecturer control does not lead to good relationships between lecturers and students.

Interpersonal factors

The interview findings presented in Section 9.5.2 on page (193) reveal two interpersonal factors: lack of training and a belief that students prefer to play a passive learning role. The lack of professional training in using constructivist-informed

teaching methods in the curriculum, as well as misunderstanding the use of a constructivist approach, is in line with Ng and Rao (2008) and Blaik-Hourani (2011), who identify some factors that hinder lecturers in the implementation of constructivist practices. They found that the incompatibility between beliefs and practices is related to such factors as gender, years of teaching experience, educational level, and previous pedagogical training.

The second factor, a belief that students prefer to play a passive role in learning, is directly related to Saudi pedagogical culture, where most lecturers use a teacher-centred approach and transfer knowledge to the students. This makes students prefer this approach because they memorise the information and use it to pass a paper examination. This result is in line with Hofstede (2008), who agreed that Saudi's culture is collectivist and that the most valued outcome among students is to earn certificates and high grades, more than any other skills, such as communication, as discussed in Section 2.4.2 of Chapter Two.

Institutional or external factors

External factors refer to the university system, and three factors emerged from the data analysis: a heavy curriculum that must be covered in a short period of time, and formal assessment (see Section 9.5.3 of Chapter Nine on page 194). The findings of the impact of curriculum supports are consistent with the results of other research (e.g., Li, 2018; Mohamed et al., 2018), which found that the centrally issued curriculum is incompatible with technology, and therefore, lecturers cannot use technology for teaching. In the current study, the lecturers call for an adaptable, customisable curriculum that can be personalised to address students' diverse learning styles.

The second factor is time constraints. The results of this study show that some lecturers indicated that they do not use a student-centred approach due to time constraints and large class sizes, which is consistent with Blaik-Hourani's (2011) and Ng and Rao's (2008) studies, in which time constraints and large class sizes were found to hinder lecturers in the implementation of student-centred practices.

The third factor is formal assessment. The results of this study show that lecturers indicated that they used summative assessments, and teaching focuses on imparting the knowledge students need to perform well on formal exams, which is consistent with (Darandari & Murphy, 2013; Qu & Zhang, 2013).

In summary, tension between lecturers' pedagogical beliefs and classroom practices might be caused by 1- Individual factors, 2- interpersonal factors, and 3-

institutional or external factors might influence lecturers' choice of pedagogy in their teaching.

11.3.4 Tension between the lecturers' pedagogical beliefs and ICT use

As shown thus far, tension exists between lecturers' pedagogical beliefs and their reported practices regarding the use of ICT in their teaching. A number of sources in the literature have also shown that several factors exist that might influence the lecturers' choice of pedagogy. In the current study, the finding that there are conflicts between lecturers' pedagogical beliefs and reported use of ICT is interesting. This result is inconsistent with some other studies, such as those of Beswick (2006), Obenchain et al. (2010), and Barrot (2016), who found a positive correlation between lecturers' beliefs and ICT use in their teaching practices. Although this result contrasts with Beswick's (2006) argument that within a learning environment, lecturers' beliefs combine to form the pedagogical culture, it is consistent with some other studies that found lecturers with a student-centred approach do not necessarily use constructivist-teaching methods with ICT (e.g., Pajares, 1992; Ertmer et al., 2001; Zhao et al., 2002; Kynigos & Argyris, 2004; Khader, 2012; Mansour, 2013; Tamimy, 2015).

The analysis of the results of the interview data also support previous findings, suggesting that lecturers who hold a student-centred approach seemed to blend both approaches in their teaching activities and might use more ICT in their teaching (e.g., Cronjé, 2006; Sidney, 2015). Furthermore, the results of the current study are consistent with suggestions in the literature that the relationship between lecturers' beliefs and their use of ICT in their teaching practices is complex, difficult to explain, and influenced by perceived external factors (e.g., Pajares, 1992; Ertmer et al., 2001). Similarly, others have found some inconsistencies between beliefs and ICT practices (e.g., Pajares, 1992; Kynigos & Argyris, 2004; Khader, 2012; Mansour, 2013; Tamimy, 2015).

The results reveal several different factors that might influence lecturers' practices, and their practices may not match their beliefs. These factors might be lecturers' level of experience, cultural context, personal beliefs, and lack of pedagogical knowledge and technology. Some lecturers may feel the university policy and culture do not support student-centred ICT practices because of the preoccupation with students' grades. Such factors might explain some lecturers' claimed preference for traditional methods over more constructivist approaches with ICT, such as discussions, which tend to enhance communication.

11.3.5 Supporting students' learning and communication

Much of the research claims that using a constructivist approach and ICT in the classroom is advantageous to learning and may be particularly useful in student engagement and communication, which is crucial to support students learning and communication. Kivunja (2014) and Karaca (2015) indicated that ICT integration into classrooms might enhance the development of 21st-century skills needed for students to function effectively in society. Modern technology can be properly integrated into student-centred classroom teaching, leading to a more effective teaching and learning process (Kaya,2015).

The strengths of ICT might be combined with a behaviourist and a constructivist approaches to learning and teaching to support students' learning and communication. Lecturers should, therefore, find a good balance between them to support classroom communication. If lecturers understand and apply both approaches properly, teacher- centred and student-centred classroom environments could then be created that would help to achieve effective student learning and communication. Involving students is key in every stage of a teaching activity, engaging with them and deciding the best approach.

In this study, some lecturers seem to combine teacher- and student-centred approaches in their current pedagogy, the constructivist element being used to design effective ICT integration that supports student communication. This result is consistent with those of a number of studies (e.g., Ally, 2004; Cronjé, 2006; Sidney, 2015), as discussed in Chapter Three in Section 3.5.1 on page (60). They favour a balance between these contrasting approaches and the lecturers' needs to decide, from the beginning of the term and while designing the lesson plan, what approach meets the students' needs. For example, the students cannot direct their learning, or they might need the lecturer to explain difficult concepts, necessitating elements of a teacher-centred approach at times. Furthermore, some lecturers specified that they usually prefer to use a variety of approaches, choosing what they deem suitable according to the class size and the students' level of understanding. However, lecturers are unable to make these decisions individually as there are complex curriculum and infrastructure issues, such as the lack of availability of technical support. In the researcher's views, it is the responsibility and function of the government and heads of the university to encourage and support lecturers in balancing a teacher-centred behaviourist and student-centred constructivist learning approach. Also, when setting curriculum guidelines, there is a need to allow flexibility for lecturers to use the most effective practices.

The possibility of combining constructivist theories with the behaviourist approach and effectively integrating ICT into teaching, thus helping them to support student learning and communication, was discussed in the literature review in Section 3.5.1 on page (60), with references to a number of researchers, such as Cronjé (2006) and Sidney (2015). This includes using technology and improving lecturers' understanding of how to use each approach. According to the constructivist principles of knowledge building, lecturers could use different activities in the classroom, such as group activities, paired work, large group discussions, and scaffolding (Vygotsky, 1978).

In particular, Eun (2019) indicated that students require appropriate scaffolding to encourage learning. Therefore, lecturers play a prominent role in the management and facilitation of learning. Constructivist theory underpins various activities, as discussed in the literature (see Section 3.4.2.2 on page 53). By using these activities in the classroom, the constructed knowledge of the students might grow. Research has helped to confirm the importance of adults creating knowledge from a constructivist (student-centred) approach, which is drawn from their life experiences (Knowles, 1998). The findings of this study are in line with those of Davis et al. (1989) and Venkatesh et al.(2003), who found that lecturers use ICT based on perceived ease of use and usefulness. However, this study found, as discussed in Section 8.3.2, on page (163) that lecturers at Jeddah University reported limited use of ICT and average ICT skills, which might affect whether they view ICT as useful or easy to use.

11.3.6 Barriers to facilitating ICT use

The Jeddah University lecturers who participated in the study reported that there are barriers to facilitating ICT use in their teaching. They identified some of these barriers and some identified factors that might facilitate the use of ICT use in their teaching practice.

Barriers to ICT use

In Chapter Ten, some barriers to ICT use were identified by the lecturers, including the lack of sufficient training in (Section 10.2.2 on page 210) and lack of technical support (Section 10.2.3 on page 213) The lack of technical support services was reported to affect a number of the lecturers' use of ICT in teaching. Even when universities purchase ICT equipment and make it available, if the technical support provided is inadequate, some lecturers will avoid using such devices in their teaching. Inadequate

support might cause stress and embarrassment for the lecturer in the event of technical problems and interrupt classroom instruction. This finding supports the idea of effort expectancy (Venkatesh et al., 2003). As explained in Section 4.3.2.3 of Chapter Four, if the lecturer does not have the skills to fix a technical problem or has to wait a long time for someone to arrive and fix it, it might discourage lecturers from including ICT resources in their teaching (BECTA, 2004). These results are similar to the findings of many other studies, as discussed in the literature review in Section 4.3.2.3 of Chapter Four (e.g., Tong & Trinidad, 2005; Hew & Brush, 2007; Yilmaz, 2011; Teo & Milutinovic, 2015). Therefore, technical support is an issue for ICT integration into teaching and learning in the classroom. Social influence could also be barrier in the interview data in this study, in Section 9.5.3.1 on page (194) some of the lecturers reported that the lack of support from their department head and the university's focus on students' grades had led many of them to prefer a behaviourist (teacher-centred) approach, especially as the university where they worked prefers that lecturers apply teacher-centred approach.

Facilitating ICT use

As discussed in Section (9.6.1), during the interviews, some lecturers identified factors that might help facilitate the use of ICT use in their teaching practice, such as the ICT supports students' academic achievement (usefulness), easy to use, behavioural intention positive attitude, availability of ICT resources, training and technical support.

Obviously, if training and ICT resources are available, lecturers might be able to use ICT to support students' learning and communication in courses taught at Jeddah University. The lecturers' suggestions are consistent with the models and theories discussed previously, indicating that ease of use and usefulness (Davis et al., 1989), facilitating conditions, and performance expectancy (Venkatesh et al., 2003) might facilitate ICT use and have a positive influence on its adoption and integration ICT into teaching and learning to support student learning and communication. Furthermore, the importance of social influence (Venkatesh et al., 2003) means that the head of the university could inspire lecturers to employ ICT in their teaching (BECTA, 2004; Lawrence & Tar, 2018). Social influence could also occur when the ICT policy is set by the Ministry of Higher Education, which might influence the lecturers' integration of ICT into their teaching and learning to support students (Albugami & Ahmed, 2016). Such a view is supported by the current study, as some

lecturers shared ideas and knowledge of new software, such as Keynote. When lecturers learn from each other, it might influence their adoption of ICT.

Some results of the current study, are consistent with the TPACK theory as discussed in Section (4.4.3), that as a lecturer's theoretical pedagogical and content increases, their ability to integrate ICT effectively also increases. A high level of ICT knowledge and pedagogical training will facilitate lecturers' use of ICT in their teaching. ICT knowledge is one of the key factors that might influence lecturers' view of using ICT to support students' communication. Mishra and Koehler's (2006) theory emphasises that lecturers having the necessary skills and ability to learn, adopt, and integrate is important to the use of new ICT technologies in teaching. However, TPACK is a new theory in education. There is no clear evidence explaining how these areas of knowledge support the effective integration of ICT into teaching and learning (Angeli & Valanides, 2009). The current study provides an important contribution to the body of literature and helps fill the gap.

11.3.7 ICT policy

This section explores the issue of the absence of an ICT policy for lecturers and reflects on factors inhibiting ICT integration and the role of government policies as key drivers of developments in education. The Saudi government is keen to enhance ICT integration in higher education, so one might expect that more opportunities would be created for lecturers to receive training in ICT use. The current study discovered that lecturers are not using ICT effectively in the classroom. However, as referred to in the literature review, there are no definite policies stipulating ICT integration in the teaching and learning process in Saudi higher education. Instead, there is a set of broad, uncoordinated statements that do not clarify how such a policy might be applied (Alamri, 2011).

The findings of this research highlight the lack of ICT policies, as discussed in Table 10.1, in Section 10.2.1 of Chapter Ten. The finding regarding the importance of policy is consistent with a number of other studies, which were discussed in Section 2.6 of Chapter Two, on page (36) (e.g., Ertmer, 1999; Afshari et al., 2009; Al-Madani & Allaafiajiy, 2014). Ertmer (1999) stated that a vision provides a starting point, an objective, and guideposts along the way to achieve a goal. From the researcher's viewpoint, such a vision must not be the creation of a single person or the result of a top-down process starting with the Ministry of Education. Involving those responsible for the outcome (e.g., the community, lecturers, students, and parents), is crucial and

allows them to help create a vision by contributing positive attitudes, knowledge, and skills. Afshari et al. (2009) stated a clear vision, which is shared by university community members, is needed when integrating ICT into universities and enhances the appropriate use of ICT in the classroom.

The results of this research are in line with those of Al-Madani and Allaafiajiy (2014), who stated that the absence of a clear vision, a lack of well-designed policies to regulate education, and minimal clarity in planning and policies might result in misconceptions and ignorance regarding ICT tool use. Therefore, a number of Saudi Arabian educators have stated there is a need for clear policy planning in regard to implementing ICT into universities, and this need is echoed in the current study's findings.

Al-Madani and Allaafiajiy (2014) found that the lack of vision regarding the effective integration of ICT into Saudi universities influences ICT use. In the absence of such a vision, universities may have no clear policy on ICT use, and if they do, the student outcomes of such a policy may be in doubt. This raises questions as to whether lecturers are accountable to universities regarding ICT use in their practice or whether there are any measures in place for ensuring that ICT is being integrated into teaching practice to meet objectives, such as supporting students' learning and communication. However, an underlying question is whether universities and policymakers clearly articulate expectations for lecturers regarding the use of ICT in their practice.

The goals of the Vision 2030 initiative include exploring major issues and challenges surrounding higher education in Saudi Arabia, including the difficulties encountered by females when using ICT. The stakeholders have been tasked with planning appropriate and practical solutions that will meet the needs of the higher education sector, including targeting specific areas of development in education, and creating a policy environment conducive to a shift towards the inclusion of teaching and learning methods underpinned by behaviourism and constructivism to expand the pedagogical culture in Saudi higher education.

11.3.8 Lecturers' competence and training

This section explores the issue of lecturers' competence in using ICT, inferred from their responses to statements about their proficiency. Most of the lecturers (n=82,51%) in this study claimed that lack of ICT skills is a major barrier to using ICT in learning (see Section 9.7 of Chapter Nine, at the end of Table 9.7 on page 204). Lacking the necessary ICT skills might have a greater influence on lecturers' use of

ICT in the classroom than pedagogical inclinations. During the interviews, lecturers suggested training should not focus on basic ICT skills; instead, the focus should be on how they can integrate ICT into their pedagogy. During the interviews, most lecturers said that the training courses were about operating computers, emailing, PowerPoint, or searching the Internet. Nearly every lecturer stated that they were dissatisfied with their ICT knowledge and skills. They emphasised a lack of appropriate knowledge regarding ICT to integrate it into their reported classroom practices effectively (see Section 9.7 of Chapter Nine and Table 9.7 on page 204). One crucial component of lecturers' ICT knowledge is their ICT skills or technological knowledge.

In general, the findings indicate that lecturers have low to average ICT skills, which may be considered one of the influencing factors that limit ICT use in their teaching. For example, Ageel (2011) and Al Mulhim (2014) found that lecturers in Saudi Arabia usually do not think of themselves as skilled in using ICT. The evidence shows that Saudi lecturers do not have essential ICT skills in the classroom, which affects ICT integration. The Ministry of Higher Education in Saudi Arabia has acknowledged a need to pay greater attention to preparing lecturers in technology use (Ageel, 2011). ICT standards taught in lecturer training institutions need to be improved because basic ICT pedagogical and technical skills are a prerequisite for university acceptance of ICT (Al Mulhim, 2014).

The literature illustrates that using learning technologies competently in teaching requires more than just computer skills. They also need to know how to apply these skills effectively to their pedagogy. The current literature supports the idea that inadequate teacher training in the skills and understanding needed to effectively use learning technologies is one of the significant barriers to their being implemented (Bingilmas, 2009; Ageel, 2011; Hismanoglu, 2012). Lecturers might not have adequate computer skills but need to be able to use digital technology appropriately in their particular subject areas to enhance student learning and communication, which the training needs to reflect (Bingilmas, 2009; Koehler & Mishra, 2009). Mishra and Koehler (2006) stated that lecturers need to know and understand the theories, concepts, and facts in their field to allow them to present the subject matter. Additionally, knowing the subject matter allows lecturers to use an appropriate approach and pedagogy and makes it easier to understand when presenting the subject to their students.

The result regarding lecturers' perceived lack of ICT competence and training is consistent with a number of previous studies, as discussed in Section 4.3.1.4 of Chapter Four on page (79). Some scholars, such as Dintoe (2018), and Lawrence and Tar (2018), and Nelson et al., (2019) indicated that for many lecturers, lacking the necessary skills and knowledge is a major barrier and that lecturers are not enthusiastic about changes in their reported practices in the classroom. However, the TPACK framework might inform strategies to help lecturers make major decisions related to determining which ICT technologies are appropriate for their teaching and practices.

11.3.9 Technology provision

This chapter discussed the main issues surrounding the tensions between lecturers' declared beliefs and their reported use of ICT to support students' communication. This researcher checked the availability of ICT resources at the university and found most classrooms are equipped with a projector and an interactive board, which greatly influences whether and how ICT is used. As the following discussion reveals, there is a strong positive correlation between the availability of technological resources and their use in the classroom. When lecturers attempt to use ICT, it is important that there is a stable Internet connection. The Saudi government should focus on the challenge of providing suitable Internet connections and suitable environment, as well as training lecturers in the knowledge and skills needed in the 21st century. This resonates with research findings that indicate one of the main problems encountered in the implementation and use of ICT in the classroom in Saudi Arabia is inadequate Internet access and a lack of computer hardware and software available to both educators and learners (e.g., Alwani & Soomro, 2010; Albugami & Ahmed 2016). Albugami and Ahmed (2016) found that the main reason for not using ICT in universities in Saudi Arabia is inadequate access to technology because most Saudi universities still lack wireless connections or have poor Internet connections.

If lecturers at Saudi universities attempt to use ICT tools that require Internet access, they will find it difficult because of the lack of a stable Internet connection (Meenakshi, 2013; Al-Madani & Allaafijiy, 2014; Majumdar, 2015). There are times when students need a reliable Internet connection to complete online group tasks, and lecturers might need it to supervise learning. Complicating this issue is the idea that most of the software packages available in universities do not support the Arabic language, which is the main language of instruction in Saudi Arabia (Al Mulhim, 2014). The availability of hardware and software, as well as reliable Internet access,

would create a valuable opportunity for lecturers to practice and develop their ICT skills.

11.4 Summary

This chapter discusses the main issues around lecturers' use of ICT to support students' learning and communication. The following conclusions were drawn from the discussions.

- 1) The lecturers have different pedagogical beliefs (behaviourist or constructivist), and some use a blended approach in their teaching.
- 2) The lecturers mainly used ICT as a means to display subject content.
- 3) There is tension between lecturers declared pedagogical beliefs and their reported classroom practices. The tension is related to three sets of factors: individual factors, such as stress and control; interpersonal factors, such as training and students' preference to be passive learners; and institutional or external factors, such as a heavy curriculum that must be covered in a short period of time and exam assessment.
- 4) The relationship between lecturers' pedagogical beliefs and use of ICT is complex, difficult to explain, and affected by contextual factors.
- 5) Using a constructivist approach with ICT in the classroom might bring many advantages to learning by, for example, enabling educators to perform their classroom practices to support student learning and communication effectively.
- 6) Barriers reportedly prevent lecturers from using ICT in the classroom, including the absence of or an unclear governmental policy on integrating ICT into classroom teaching, and lecturers' lack of competence and training in using ICT.
- 7) Improving institutional provisions, such as hardware, software, and reliable Internet connectivity, could facilitate ICT use.

It is necessary that this 'push' be seen through to its implementation. Of importance to this implementation is the Vision 2030 project, which aims to include teaching strategies that are student-centred and, in essence, constructivist and would enable the use of ICT to support students' learning and communication. The next chapter brings the thesis to a close. Chapter Twelve discusses its limitations, contribution, conclusion from the study and recommendations for further research, as well as reflections on the ending of this PhD journey.

CHAPTER TWELVE

CONCLUSION AND RECOMMENDATIONS

12.1 Introduction

The previous chapters discussed the results of this mixed-methods study, which used questionnaire and semi-structured interviews to increase the understanding of the tensions in lecturers' views regarding ICT use to support student learning and communication and the influencing factors, particularly within the unique context of Saudi Arabia. This chapter highlights the study's limitations and the original contribution to knowledge and the literature, and then the main conclusions derived from the study are outlined. Recommendations are offered for action to be taken at the classroom level, at the lecturer level, at the university management level, and the Saudi Ministry of Education to encourage students' communication and the integration of ICT. Some ideas are offered for potential further research, and finally, the chapter concludes with reflections on the PhD journey.

12.2 Study Limitations

Despite its many strengths, such as being a pioneering study in the area of ICT use in Saudi education, the study had a number of limitations.

1. The study included lecturers from one university, and the interview data were gathered primarily from female lecturers.
2. The data collection phase of this study was conducted over a period of three months, implying a time constraint as one of its limitations. Face-to-face interviews were used to collect data, with each interview session lasting 40–60 minutes, meaning that only a relatively small number of respondents were interviewed.
3. No observations were carried out to observe lecturers' teaching and understand their actual teaching practices. However, observation alone would be insufficient to provide better results, and the lecturers' lesson plans could also have been examined to gain insight into how they plan their classroom teaching activities.
4. Considering that only female lecturers were interviewed, gender disparity is another study limitation. This situation is made more

pronounced due to Saudi Arabia's education system, which strictly segregates academic institutions based on gender. Saudi Arabian cultural practices prohibited the researcher, who is female, from conducting research at a male university. Consequently, it was difficult to extend the study's focus to include male lecturers, particularly through interviews and observations regarding how the lecturers use ICT in their classroom teaching. This study would have been enriched by involving male lecturers in the study because doing so would have revealed certain important sociocultural issues related to gender and how gender may play a role in the use of ICT in teaching and learning. In light of this limitation, discussions of gender issues in ICT use should be viewed with particular caution. Involving the students' views regarding ICT use could also have enriched the study.

5. The research was conducted in one particular setting and explored the lecturers' views about ICT use in teaching to support students' learning and communication at Jeddah University in Saudi Arabia. This restricts the generalisability of the research results. The setting imposed additional limitations due to the possible cultural mismatching of Saudi educational practices and Western research. The researcher was aware of this issue, and it was an explicit consideration in the research.
6. The researcher positionality as an insider might have been a source of bias. It cannot be guaranteed that my position as a lecturer at the university did not influence the participants' responses or that my enthusiasm for technology did not affect my interpretations, despite my best efforts to avoid it.

Despite these limitations, the research has made a number of contributions to theory and practice, which are discussed in the next section.

12.3 Original contribution to knowledge and literature

This research offers novel contributions to both theory and practice. The study's theoretical contribution is that lecturers should broaden their pedagogy to understand what happens in the learning environment as no single theory or pedagogical approach can support student learning and communication. To understand the use of ICT, lecturers need technological, pedagogical, and content knowledge. Therefore, depending on the content lecturers are teaching, they need to draw on an appropriate

pedagogical approach to make it work. That means under different circumstances, for different lecturers and different classes, and at different times, lecturers have to change their pedagogical approach to suit their technological, pedagogical, and content knowledge and their purpose. Lecturers need to be much more skilled at managing pedagogy, not just knowing the subject content because it is no longer sufficient. This is a major challenge in the Saudi education system because lecturers have not previously done this. This study did not produce new theory, but a new way of thinking about theory and pedagogy in the Saudi Arabian context. It has to work in this particular context because lecturers need to be much more skilled and much more flexible in what they are doing in the classroom to support student learning and communication.

The research contributes to practice by offering deep insight into the reported extent and manner of Saudi university lecturers' use of ICT. Study has shown that in general, at Jeddah University, academics' use of ICT is confined to basic functions, such as informing students of schedule changes. This suggests is a need to increase lecturers' awareness of affordances of ICT and their potential usefulness for teaching and learning a variety of subject areas.

This thesis is new in the Saudi context; the whole idea of student communication and collaborative teamwork in Saudi Arabia is relatively new. This is an under-researched area, particularly in the Arab world, especially in Saudi Arabia. This thesis is timely because it aligns with the Saudi Vision 2030 project, which was intentional. This topic is interesting in the Saudi context because Saudi Arabia is on the verge of significant changes; this study will help people understand what is happening currently and, therefore, what is advisable.

Furthermore, this study provides insights into issues arising in the use of ICT in education, which can be considered by policymakers in Saudi Arabia, such as the need for a clear ICT policy and appropriate training. In relation to ICT integration, the study results contribute to the current body of knowledge by assisting policymakers in formulating technology-related policies that align with lecturers' requirements. The findings can also improve university policymakers' understanding of how contextual factors promote or restrict ICT integration.

12.4 Conclusion from the Study

This study has the potential to provide a thorough understanding of Jeddah University lecturers' views on the main issues surrounding their use of ICT to support students' learning and communication.

In this study, the researcher elicited lecturers' pedagogical beliefs and their reported teaching strategies, as well as the barriers they may face when using ICT in their teaching. The lecturers' responses to semi-structured interview questions were also analysed to gain a deeper understanding of these issues. The data gathered provide insights into lecturers' pedagogical beliefs and the issues that might influence lecturers' views on using ICT to support student learning and communication. Some important conclusions regarding the complexity of the lecturers' views within the Saudi context can be drawn from the research findings.

The study was designed to answer specific research questions. The main question in the present study was, 'What are the main issues surrounding lecturers' use of ICT to support students' communication?' This question is divided into three research sub-questions:

- 1) What are lecturers' pedagogical beliefs regarding the use of ICT to support students' learning and communication?
- 2) To what extent might lecturers' pedagogical beliefs influence their practice in the use of ICT to support students' learning and communication?
- 3) Which demographic characteristics or other features of lecturers affect their use of ICT to support their students' learning and communication?

The researcher investigated the lecturers' views about using ICT to support students learning and communication because encouraging students' communication is very important for three main reasons: to enhance their ability to study and learn effectively, for personal and social well-being, and to prepare them for the job market. According to Kreijns et al. (2003), communication plays a significant role in success in one's personal life. Similarly, Khan et al. (2017) argued that communication is important for students' academic success, as well as success in professional life. There is a positive relationship between students' communication and subsequent job performance (Ihmeideh et al., 2010). According to Iksan et al. (2012:71-72),

“Communication is important, especially during the job-seeking process. The new graduate would be tested on their communication during their job interviews. Therefore, universities and faculties have to ensure that students are equipped with the ability to communicate clearly and university students have to be equipped with this skill before they graduate”.

In Section 4.2.1 of Chapter Four discussed communication-based activities from an early stage in university learning can help students prepare for future challenges, and a favourable communication environment can contribute to developing their communication skills (Ihmeideh et al., 2010). In this regard, it is desirable for university graduates to be offered communication opportunities in preparation for future jobs (Morreale et al., 2000). In another study, Harlak et al. (2008) recommended that students be exposed to activities that can improve their communication from the beginning of the first year of their university education. They reached this conclusion based on a questionnaire they used to collect self-report data on students’ perceptions, which revealed a need for universities to offer many more activities to improve students’ communication so that they can face the challenges of the modern world. Learning 21st-century skills, such as communication, can be facilitated through the use of ICT, which has been shown to have a positive influence on student learning and communication (Ghavifekr et al., 2016). Thus, employing ICT to encourage students’ communication has worthwhile outcomes. For example, Hue and Ab Jalil (2013) argued that integrating ICT into learning and teaching improves student learning and supports critical thinking, decision-making, and communicating effectively. According to Davidson (2012) and Martínez Rivera and Duță (2015), the use of ICT in classroom teaching activities supports student communication. Davidson (2012) agreed that using ICT improves student communication and collaboration. Likewise, Martínez Rivera and Duță (2015) asserted that using ICT in teaching activities for university students has a positive impact on students’ teamwork skills. The aim of many developed education systems in a changing world is to equip students with 21st-century skills, such as communication, to acquire and process information (Hurst et al., 2013).

A key motivation for conducting this study in Saudi Arabia was the authoritarian and hierarchical nature of the education system. Lecturers are not so much do not concerned with the skills students are developing as on the product of learning. This is seen in subject content- based lecture and the emphasis given to testing, examinations, and students’ grads. Although the participants declared

themselves to be favourably disposed towards a student-centred approach that encourages student communication, the practices they claimed to use in the classroom reflect a deeply rooted teacher-centred approach with an emphasis on transmitting knowledge, revealed by the research findings. It is not surprising, that lecturers reported low intentions of ICT and that lecturers who reported integrating ICT are in practice not doing so, or only in very limited ways. Their attention is directed to student grades and individual assessment rather than negotiation, discussion, and communication because of time constraints and insufficient training in ICT skills. This apparent tension between the lecturers' declared beliefs and their reported practices regarding ICT integration, was seen as the product of a complex interplay among a variety of internal and external factors, related to the structure of the education system, the curriculum, the availability of resources, and both initial and in-service training. The Saudi education system is highly centralised, offering limited opportunity for lecturers to develop their own teaching philosophy and practices. Lecturers reported the pressure they felt as a result of being required to deliver the prescribed curriculum on an unrealistic timescale. They drew attention to the between the modernising agenda declared by the government (including calls for lecturers to use ICT) and the unclear policies and rigid curricula, which do not reflect an understanding of classroom realities. Other challenges hindering ICT integration deficiencies of the regional infrastructure, large class sizes, and unavailability or poor maintenance of educational technology aids. Above all, ICT integration is tempered by the insufficient quantity and inadequate quality of lecturer training in ICT. As result lecturers had a weak understanding of the student-centred approach, inadequate ICT skills, and difficulty applying theory in practice. If they experienced problems or disappointing outcomes, they attributed them to students' passivity or distraction.

Despite these multiple challenges, however, some of Saudi lecturers in this study, nevertheless showed an interest in blending teacher-centred and student-centred approaches, which they suggested might support student learning and communication in the classroom. Given the lecturers' interest in educational reform and willingness to develop their skills through self-study and training, it seems possible that with appropriate training and support, ICT could be effectively implemented in the Saudi context. Recommendations for actions that should be taken at different levels to encourage student communication are provided in the next section.

12.5 Recommendations

The study's findings, as well as the conclusions drawn from them, suggest several recommendations. The following suggestions, therefore, are based on the findings presented in Chapters Eight, Nine, and Ten.

12.5.1 Recommended actions to be taken at the class level to encourage the development of students' communication skills

- Lecturers should provide opportunities for student communication by varying classroom activities and teaching strategies, for example,
 - Lecturers should use group discussions in their teaching activities with ICT to support students' communication.
 - Lecturers should use group projects in their teaching activities with ICT to give students opportunities to develop their communication skills.
 - Students should be offered opportunities to give presentations.
 - Lecturers should use formative assessments that reward classroom participation to support students' learning and communication.
- 'Expectation management' is needed, and students should know, at the beginning of the course, that they will be required to participate in a variety of activities, for example,
 - Students should know, at the beginning of the course, that they will be expected to engage in group discussions.
 - Students should know, at the beginning of the course, that they will be expected to contribute to group projects.
 - Students should know, at the beginning of the course, that they will be required to give presentations.
 - Participation in these activities should be mandatory and graded (i.e., it should contribute to a percentage of each student's final assessment).

12.5.2 Recommended actions to be taken at the staff level to encourage the development of students' communication skills

- Improved initial induction/training is needed on the benefits of encouraging students' communication and how to use ICT for this purpose. For example, they could have opportunities for hands-on experimentation with technology and contemporary pedagogy in authentic settings that are similar to their everyday professional responsibilities. This can be achieved if universities develop into active

learning communities. The action plan needs to be based on specific, achievable objectives and requires a diverse range of activities focused on using ICT. Through such activities, university-level teaching staff might be provided the opportunity to observe exemplary teaching sessions led by ICT experts. Thus, collective and collaborative organisational cultures will be developed in the university to support the dissemination of good pedagogical practices, producing a collective experience, the sharing of efficient teaching strategies, and effective cooperation between lecturers.

- Continuing induction/training is needed on the potential of new technological developments and applications that encourage students' communication. Lecturers should increase their proficiency in employing a range of methods by taking courses to build upon their existing teaching strategies since this will enable them to perform more effectively in their role. To change teaching methods in higher education in Saudi Arabia, it is important to transfer the responsibility for learning from the lecturers to the students, gradually enabling the students to understand how to learn independently. This would mark a good beginning for applying constructivism in Saudi higher education and would require training for lecturers, such as introducing this approach to the students, indicating its importance for them in real life, and initially applying the method for a limited time in lessons until students become familiar with the variety of teaching approaches and the use of ICT.
- Lecturer training should be reformed to include ICT integration in teaching and learning to provide professional development programmes to educate lecturers and equip them with the necessary ICT knowledge and skills, so they can use ICT effectively in their teaching.
- There is a need for ICT-based courses and teaching materials, particularly at lecturer training institutions, to enhance lecturers' confidence and ability, thus developing positive perceptions of ICT use in teaching and learning.
- To train lecturers in the knowledge and skills needed in the 21st century, one option might be an exchange programme with foreign higher education institutions to enhance Saudi lecturers' capabilities and competencies (Al-Madani & Allaafiajiy, 2014).

- The university should allow lecturers to try out new teaching approaches that may be more ‘time-consuming’ and encourage lecturers to experiment with ICT to support their teaching responsibilities.
- Universities should encourage lecturers to combine pedagogical approaches. For example, they could suggest that lecturers use behaviourist-teaching methods to explain the subject and then ask students comprehension questions to determine whether they understand the concept. This could be combined with a constructivist approach involving various activities, such as a group activity, paired work, large group discussions, and scaffolding, all of which might support student learning and communication. Additionally, these learning activities might support students’ communication and collaboration through cooperative learning.

12.5.3 Recommended actions to be taken by university management to encourage the development of students’ communication skills

- Universities should encourage lecturers to combine assessment requirements, shifting the balance between summative and formative assessment, to give greater weight to students’ participation in class activities rather than focusing solely on summative examinations.
- The university could reduce class sizes, as fewer students would allow more opportunities for students to communicate and participate in classroom discussions.
- Providing more ICT resources in classrooms would encourage lecturers to use ICT to support students’ communication.
- Leaders of the university should implement technological plans and share a common vision with lecturers to stimulate them to adopt ICT in teaching and learning.
- The leadership should encourage lecturers to use ICT, and there is a need to equip university heads with adequate ICT knowledge and skills, so they can encourage and facilitate the adoption of ICT in teaching and learning more effectively.

12.5.4 Recommended actions to be taken by the Saudi Ministry of Education to encourage students’ communication

A clear vision for ICT use should be set by the Ministry and linked to the university’s written policy. Integrating ICT policies into the higher education

sector is a critical area for consideration. Policymakers at the Ministry level should create a clear policy for higher education institutions to incorporate a clear ICT policy, plan, and objectives. Since the Saudi government is keen to enhance ICT integration in higher education, it might be expected that more opportunities would be created for lecturers to be trained in how to use ICT.

The specific policy recommendations are as follows:

- There is a need for the government to provide clarity in the strategies for adopting and implementing ICT, as well as provide guidance for lecturers regarding ICT use in the classroom setting, leading to positive attitudes and embracing desirable practices.
- The Saudi government should pay more attention to providing universities with a suitable Internet connection and a good infrastructural environment.
- Lecturers should be made aware of any ICT policy since they must be involved in making changes. The reported lack of time and training for ICT reflects the unsystematic approach, caused by a lack of policy. Significantly, ICT policies can embed the status of ICT within the curriculum. The lack of such a policy reflects a lack of vision from policymakers, whose thinking is not aligned with the curriculum in regard to ICT integration, leading to their not providing adequate training opportunities or supporting lecturers in their pedagogical decision-making in relation to ICT.

Need for a suitable curriculum

Education policymakers should develop suitable curricula for integrating ICT.

- The curriculum in each subject area should be suitable for integrating ICT; the lecturers in this study claimed that the curricula do not allow them to use ICT, and thus, the education policy should provide clear guidelines for suitable curriculum integration.
- Each curriculum must be documented in detail with clear guidance regarding how and when to use ICT in teaching to support students' communication skills.
- A suitable curriculum must be formulated that provides lecturers with the opportunity to integrate ICT without undue pressure or time restrictions to cover the content-heavy curriculum.

Need for improved funding, resources, and technical support

- The Ministry should provide the university and lecturers with adequate technological resources, technical support, and administrative support to encourage them to use ICT successfully in classrooms.
- Collaboration between software designers and lecturers in the design and development of educational software would help ensure resources are available that are suitable for a wide range of teaching and learning contexts.
- Female technicians should be appointed at women's universities and campuses to solve ICT problems as quickly as possible.

12.6 Recommendations for future research

In light of the current findings, it is hoped that this study will help guide future researchers in selecting particular areas for research and in exploring the conflict between lecturers' beliefs and practices. Suggestions for future research are as follows:

1. There is a need to engage in pedagogic discussion with interview the university head or leadership as it is extremely important to help lecturers adopt and integrate ICT in a university setting and conduct further research in this area, particularly through interviewing education policymakers. This would provide more information on the current status of ICT use in universities, as well as their views on the procedures and initiatives they are putting in place to promote the use of ICT and reduce the challenges faced in teaching and learning.
2. The use of an observational method would provide deeper insight into lecturers' actual practices in the classroom.
3. For future studies, the students' experiences related to how their lecturers use ICT in teaching should be included so that a comparison of perspectives can be made, leading to better insights regarding ICT use in education.
4. This study was conducted at only one university (Jeddah University); therefore, future studies should expand the scope to involve other universities (private and public), which would increase the reliability of

the study findings and, potentially, reveal additional factors affecting ICT use.

5. Investigating the cultural factors and differences in university lecturers' use of ICT, such as compare between culture and other culture, is extremely important to help lecturers adopt and integrate ICT in a university setting.

12.7 Reflections on the Ph.D. Journey

The aim of this research was to identify lecturers' views regarding ICT use to support students' learning and communication, as well as the benefits of ICT use in the university setting. Engaging in this investigation produced new insights and experiences. For example, I started investigating the benefits of using ICT to support students' learning and communication with 160 lecturers who appeared to have positive attitudes towards using ICT; however, after analysing the questionnaire data, the tensions between lecturers' beliefs and strategies they claimed to use appeared to be a crucial factor in the process. Along with my growing understanding of the tensions that appeared in the data, my own opinions changed as a result of gaining new insight, and this helped me in my research and in my practice as a lecturer at the university. For instance, I focused on lecturers' views on using ICT to support students' learning and communication due to my experience as a lecturer, and my master's thesis was about using technology in teaching and learning. I was extremely frustrated when I saw many ICT tools in the university not being used, or lecturers only using them to deliver information without engaging the students. However, after the last four years spent reading the literature and reflecting on the findings of this research, my perspective has changed, and I am more aware of lecturers' reasons for not using ICT in their teaching and why they practice traditional behaviourist teaching in the university even when they have constructivist beliefs. While collecting the data, I began to realise how many difficulties lecturers face when integrating ICT into their practices and how important it is to clarify the roles of lecturers, universities, and policymakers and explicitly discuss effective ICT integration into teaching at the university level to support students' learning and communication.

I also developed as a researcher. I found completing my thesis in education to be extremely challenging. I was new to the discipline of educational research and, consequently, faced numerous problems, not the least of which were the language barrier and my ambition to acquire knowledge in this new discipline. Therefore, I

began by studying the ICT literature on lecturers' beliefs and constructivism and how it supports the use of ICT in education. After reading the literature, I was convinced that ICT could become an important tool in future learning methods adopted in higher education institutions in Saudi Arabia. However, I had to be especially careful when collecting and interpreting data and examining the literature so that my own personal convictions did not compromise my objectivity, although it was difficult at times.

While my journey towards earning a PhD may have ended with the submission of this thesis; I am in a continuing process of self-discovery. This thesis has made me question the beliefs that I once held, and I am repositioning myself as I progress along my lifelong journey.

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APPENDICES

APPENDIX 1: UNIVERSITY OF HULL ETHICAL APPROVAL LETTER



ETHICAL PROCEDURES FOR RESEARCH AND TEACHING

PERMISSION TO PROCEED WITH RESEARCH: ETHICAL APPROVAL

Name:	Nora Alabadi
Programme of Study:	PhD
Research Area/Title:	Evaluation of the use of ICT to support student' learning and communication in a Saudi Arabian higher education institution: conflicts, contrasts and tensions in lecturers' perspectives.
Image Permission Form:	NA
Name of Supervisor:	Stewart Martin
Date Approved by Supervisor:	January 2016
Chair of Ethics Committee:	Dr Fiona James
Date certificate re-issued:	November 2019

APPENDIX 2: LETTER TO THE UNIVERSITY OF JEDDAH REQUESTING PERMISSION TO CONDUCT RESEARCH

26th March 2016

The Head Lecturer

Dear Mr ...

Permission to Undertake Research at the Jeddah University

I am a doctoral student in the Centre for Education Studies at the University of Hull, in the UK. My home is in Saudi Arabia, and I have been a lecturer for two years, working in Jeddah University. I am researching lecturers' perceptions towards ICT integration in teaching and learning.

I am writing to seek your permission to undertake my research in Jeddah University. The research would take about three months. I plan to use a range of data collection methods with the lecturers.

Throughout the data collection exercise, the participants' anonymity will be maintained. The lecturers' names will not be mentioned in the final report nor in any academic article published. In addition, the data collection instruments have been designed in accordance with the guidelines of the Ethics Committee of the Faculty of Education, University of Hull. Therefore, all the potential ethical issues involved in this research have been addressed.

I will contact you via phone in the next few days to enquire if you are willing to help me with my research.

The results of the study, which is the first of its kind carried out in Saudi Arabia, will be made available to your university.

If you would like confirmation regarding the legitimacy of my research, my supervisors are Professor Martin Stewart and Dr Peter Williams. You can reach them at the following address:

Centre for Educational Studies

The University of Hull

Cottingham Road

Hull, HU6 7RX

UK

Stewart.Martin@hull.ac.uk

P.J.Williams@hull.ac.uk

Thank you for your time, and I look forward to hearing from you.

Sincerely,

Mrs Nora Alabadi

Doctoral Researcher

Postgraduate Office

Centre for Educational Studies

The University of Hull

n.M.alabadi@2013.hull.ac.uk

APPENDIX 3: LETTER FROM THE UNIVERSITY TO ALLOW THE RESEARCHER TO ENTER JEDDAH UNIVERSITY

from 25-3-2016 to 25-6-2016

Name: Nora Alabadi

PhD Student at Hull University; Travel to Saudi Arabia for 90 days to collect data.

From 25-3-2016 to 25-6-2016

Kingdom of Saudi Arabia Ministry of Education University of Jeddah Deanship of Graduate Studies	 جامعة جدة University of Jeddah	المملكة العربية السعودية وزارة التعليم جامعة جدة عمادة الدراسات العليا
<p>سعادة / عميد الدراسات العليا</p> <p>حفظه الله</p> <p>تحية تحياتنا، نفيد سعادتكم بأن الاستاذة/ نورا محمد عبدالله العبادي - المحاضر بقسم مهارات الاتصال بكلية العلوم والآداب- فرع الكامل المتبعة في جامعة مال بالملكة المتحدة برقم ملف المحققة k1376 في رحلتها العملية لاجراء دراسة ميدانية (مقابلات مع الاستاذات اللاتي يدرسن مادة مهارات الاتصال) وذلك لاستكمال بحثها الذي عنوانه (التحقق من مدى استخدام تقنيات المعلومات في تعزيز مهارات الاتصال ومهارات التفاعل الاجتماعي في التعليم العالي) قد أنجبت رحلتها العلمية التي قامت بتنفيذها خلال الفترة من ٢٠١٦/٤/١٠ م الى ٢٠١٦/٦/٢٠ م.</p> <p>وعليه نرجو التكرم بتوثيق الإجراءات كما هو معتمد بجامعة جدة.</p> <p>وتقبلو خالص تحياتي وتقديري،،،،،</p> <p>وكيلة عمادة الدراسات العليا المكلفة بجامعة جدة</p> <p>د. أمالتي بنت عطوي الرشيدى</p> <p>١٤٣٨/٩/١٨</p> 		
<p>الرقم : ٥٥٤ / ٢٤ / ١٤٣٨ Ref.: التاريخ : ١٤٣٨ / ٩ / ١٨ Date: Encl.: ص.ب.ب. ٨٠٢١٧ جدة: ٢١٥٨٩ ت. ٠١٢ ٦٩٥١٢٦٦ / ٠١٢ ٦٤٠٠٠٠ / ٠١٢ ٦٣٨٧ فاكس: ٠١٢ ٦٩٥٢٨٩٦ P.O.Box: 80217 Jeddah : 21589 Tel.: 012 6951266 / 012 6400000 - 61387 Fax.: 012 6952896 Website:graduatestudies.kau.edu.sa</p>		

APPENDIX 4: UNIVERSITY OF JEDDAH APPROVAL LETTER

MINISTRY OF HIGHER EDUCATION UNIVERSITY OF JEDDAH Faculties of the university branch al kamil province	 جامعة جدة University of Jeddah	وزارة التعليم العالي جامعة جدة كليات فرع الجامعة بمحافظة الكامل
ENCL:	DATE : ١٤٤٠/١١/٢١	REF :
الموضوع : طلب تسهيل مهمة باحثة		
سعادة وكيالة شطر الطالبات بجامعة جدة حفظها الله ورعاها		
السلام عليكم ورحمته الله وبركاته		
افيد سعادتكم بأن الأستاذة نورا محمد عبد الله العبادي محاضر بقسم مهارات الاتصال بكلية العلوم والآداب بالكامل فرع جامعة جدة - مبيّعة للحصول على درجة الدكتوراه من جامعة هال بالمملكة المتحدة رقم الملف في الملحقة K1376 ، تتطلب دراستها إجراء مقابلات مع أستاذات قسم مهارات الاتصال لجمع بيانات لموضوع دراستها والذي عنوانه : التحقق في استخدام تقنيات المعلومات والاتصالات في تعزيز مهارات الاتصال ومهارات التفاعل الاجتماعي		
الهدف من البحث: التحقق من مدى استخدام تقنيات المعلومات والاتصالات في تعزيز مهارات الاتصال ومهارات التفاعل الاجتماعي في التعليم العالي . أرجو شاكركم بتسهيل مهمتها في إجراء المقابلات مع الفئة المستهدفة وإفادتنا بقيامها بها وتفضلوا بقبول أسمى آيات الشكر والامتنان ودمتم في رعاية الله		
مشرفة الطالبة : د/ سامية المفتاح نور الهدى		
التوقيع :	التاريخ : ٢١ / ١١ / ١٤٤٠	
ص.ب ١١٠ الكامل ٢١٩٣١ p.o Box: 110 Alkamil 21931	فكس : ٠٢/٥٩٤٧٩٠٤ website: www.kau.edu.sa	ت : ٠٢/٥٩٤٧٨٨٢

APPENDIX 5: CONSENT FORM –QUESTIONNAIRE PARTICIPANTS

Lecturers' views towards ICT integration to support student learning and communication and the influential factors.

I have read and understood the attached letter and agree to participate in the study. And I understand that the purpose of the research is to investigate lecturers' pedagogical beliefs about using ICT to support teaching and learning and the influential factors.

I understand that:

1. Upon receipt, my questionnaire will be coded and my name and address kept separately from it.
2. Any information that I provide will not be made public in any form that could reveal my identity to an outside party (i.e., I will remain fully anonymous).
3. Aggregated results will be used for research purposes and may be reported in scientific and academic journals.
4. Individual results **will not** be released to any person except at my request and on my authorisation.
5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Name

Signature: Date:

The researcher's contact details are: Nora Alabadi, Doctoral Researcher, Postgraduate Office, Centre for Educational Studies, The University of Hull; n.M.alabadi@2013.hull.ac.uk

The contact details for the secretary to the Faculty of Education Ethics Committee are: Clare McKinlay, Research Office, Faculty of Education, The University of Hull, Cottingham Road, Hull, HU6 7RX. Email: c.m.mckinlay@hull.ac.uk tel. 01482-465031.

APPENDIX 6: CONSENT FORM - INTERVIEW PARTICIPANTS

Lecturers' views towards ICT integration to support student learning and communication and the influential factors.

I have read and understood the attached letter and agree to participate in the study. And I understand that the purpose of the research is to investigate lecturers' pedagogical beliefs about using ICT to enhance social interaction.

I understand that:

1. Upon receipt, my interview will be coded and my name and address kept separately from it.
2. Any information that I provide will not be made public in any form that could reveal my identity to an outside party (i.e. I will remain fully anonymous).
3. Aggregated results will be used for research purposes and may be reported in scientific and academic journals.
4. Individual results **will not** be released to any person except at my request and on my authorisation.
5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Name

Signature: Date:

The researcher's contact details are: Nora Alabadi Doctoral Researcher at University of Hull n.M.alabadi@2013.hull.ac.uk

The contact details for the secretary to the Faculty of Education Ethics Committee are: Clare McKinlay, Research Office, Faculty of Education, University of Hull, Cottingham Road, Hull, HU6 7RX. Email: c.m.mckinlay@hull.ac.uk tel. 01482-465031.

APPENDIX 7: PILOT EVALUATION TEST FORM

Please answer the following questions and provide comments and feedback regarding the suitability of the questionnaire and the clarity of the questions.

1. How long did it take you to fill out this survey?

Minute(s)_____

1. Were the questions understandable?

Yes ()	No ()
----------------	---------------

If not, please show the question number and what needs to be clarified.

Question number	Explanation

Were the scales (rankings) understandable?

Yes ()	No ()
----------------	---------------

If not, please suggest what needs to be done to make the scales easier to understand.

--

Overall, what suggestions do you have to improve the survey?

--

Thank you for your support with this pilot study.

APPENDIX 8: QUESTIONNAIRE

Lecturers' views towards ICT integration to support student learning and communication in teaching and learning process and the influential factors.

Thank you for agreeing to participate in this study. This questionnaire is designed to explore lecturers' views towards ICT integration in teaching and learning and the influential factors. The information you provide will be kept confidential. Please tick the box of the option that best applies to you.

It will be helpful if you provide your contact details to arrange a follow-up interview.

Section A

a. Name (optional) -----

b. Phone (optional) -----

c. Email (optional) -----

d. What is your age range?

25-30

31-40

41-50

51 and above

e. How many years have you been lecturing?

0-3 years

4-6 years

7-10 years

11 years or more

f. What is your highest qualification?

.....

g. What is your faculty?

Social Sciences

Education

Languages

Computer Technology

Mathematics

Other.....

Please go to page 2

Section B. ICT use practices

1. How do you rate your computer skills?

- a. Very advanced
- b. Advanced
- c. Average
- d. Limited
- e. Very limited

ICT tools and application use during teaching

2. I use the following in my teaching (please tick as appropriate):

ICT tools and application use during teaching	Yes	No	Unsure
Interactive whiteboard			
PowerPoint			
Projector/data show			
Virtual learning environments, such as Blackboard and Acdox			
Social media (blogs and Twitter)			
Other. Please state_____			

3. My competence and training to use ICT (please tick as appropriate):

Competence and training to use ICT	Yes	No	Unsure
I have the knowledge and skills to use ICT.			
I have low experience of using ICT.			
I have training to use ICT.			
I have the technical support to use ICT.			

Please go to page 3

Section C. Teaching strategies

1. I spend the following hours online directing discussions among students per week.

More than 5 hours 4 hours 3 hours 2 hours 1 hour or less

2. I use the following in my teaching strategies (please tick as appropriate):

Teaching strategies	Yes	No	Unsure
Lecturing			
Large group discussions			
Paired activities			
Presentations			
Group projects			
Other. Please state _____			

3. How important are the following strategies in teaching and learning with ICT?

(Please tick as appropriate.)

Teaching strategies	Very important	Important	Neutral	Slightly important	Not important
Lecturing					
Large group discussions					
Paired activities					
Presentations					
Group projects					
Other. Please state _____					

Please go to page 4

Section D. Lecturers' pedagogical beliefs towards ICT

Lecturers' pedagogical beliefs towards ICT	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
I believe that ICT is beneficial for improving students' learning.					
I believe ICT can sometimes be more effective than traditional classroom learning.					
I believe that it is beneficial to give students time to work together using ICT.					
I believe the use of ICT has the potential to improve social interaction in the classroom.					
I believe that ICT can help shift the balance from teacher-centred teaching approaches to student-centred teaching approaches.					
I believe that ICT can enhance lecturers' effectiveness.					

Please go to page 5

Section E: Attitudes towards ICT

Lecturers' attitudes towards ICT	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
ICT is important to instructional practices.					
ICT is important for learning in the classroom.					
ICT has an important role to play in teaching and learning.					
Using ICT has the potential to improve students' learning in the classroom.					
Using ICT in learning increases the quality and the amount of students' interactions with each other.					
Using social media platforms, such as wikis, blogs and Twitter, is beneficial to the development of social interaction.					
Lack of knowledge and skills prevents me from using ICT.					

Please go to page 6

Section F: Barriers to ICT use

Barriers	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Lack of clear policy for the use of ICT.					
No or slow Internet access.					
Lack of training.					
Lack of technical support.					
Lack of hardware and software in Arabic.					
Other. Please state _____					

Thank you for participating in this questionnaire.

APPENDIX 9: INTERVIEW PROTOCOL

Directions: Thank you for agreeing to participate in this study. This interview is designed to explore the use of ICT to support teaching and learning and the influential factors. The information you provide will be kept confidential. If any item requests information that you do not wish to share, feel free to omit it. It will be appreciated if you give as much information as you possibly can. There are no right or wrong answers.

Part One: Warm-up question, such as:

- Could you briefly talk about yourself and your teaching experience?
- How long have you been teaching?
- Can you tell me about your current teaching and from where you got your degree?
- Do you think you have the necessary skills to use ICT in your teaching?
- What ICT tools do you use to support student learning and communication?

Lecturers' views towards ICT in the classroom to support teaching and learning

- Describe your most preferred teaching style during your teaching and state your role in the teaching and learning process?
- Can you describe the activities you use during your teaching?
- What are the teaching strategies that could support students' communication?
- Could you please give examples of activities that you have implemented in your teaching to support students' communication?
- What are the influential factors that restrict you from supporting students' communication?
- What ICT tools have you used during your teaching?
- Can you talk about the advantages and disadvantages of using ICT in teaching and learning to support communication?
- Does the university have an established written policy for the use of ICT in teaching? If so, what is it?
- What do you think prevents you from using ICT in your teaching and learning?

Thank you for answering these questions.

APPENDIX 10: SCHEDULE FOR 16 INTERVIEWS

WEEK ONE

	Sunday	Monday	Tuesday	Wednesday	Thursday	Notes
9:30– 10:30	Lecturer 1 interview	Lecturer 4 interview	Lecturer 7 interview	Lecturer 9 interview	Lecturer 12 interview	
10:40– 11:40		Lecturer 5 interview	Lecturer 8 interview	Lecturer 10 interview	Lecturer 13 interview	
12:00– 1:00	Lecturer 2 interview			Lecturer 11 interview		
2:00– 3:00	Lecturer 3 interview	Lecturer 6 interview				

WEEK TWO

	Sunday	Monday	Tuesday	Wednesday	Thursday	Notes
9:30– 10:30	Lecturer 14 interview		Lecturer 15 interview	Lecturer 16 interview		

Plan for collecting the data for the thesis

Data collection plan			
Objective	Phase 1	Phase 2	
		Conduct a survey measuring lecturers' use of ICT to support teaching and learning in higher education.	Interview lecturers to determine the use of ICT to support teaching and learning in higher education classrooms and how this is reflected in their practice.
2016	25 March	Travel to Jeddah, Saudi Arabia.	
		Obtain permission to conduct research at Jeddah University and its branches.	
		Contact departmental heads and lecturers to obtain informed consent.	
		Recruit participants.	Recruit participants (ongoing).
		Distribute questionnaires.	
	28 March	Collect completed questionnaires.	
	1 April	Begin to examine the data for emerging issues.	
	10 April		Begin interviews.
			Transcribe and translate the transcripts from Arabic into English (ongoing until all interviews have been conducted).
			One hour for each interview with the 16 lecturers.
	26 June		

Analysing the quantitative data using SPSS

The screenshot displays the SPSS Statistics interface with three frequency tables. The first table shows the distribution of hours spent on online discussions. The second table shows the frequency of ICT use in teaching and learning activities for group discussions. The third table shows the frequency of ICT use in teaching and learning activities for general activities.

Frequency Table 1: I spend the following hours online directing discussions among students per week

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
More than 5 Hours	54	33.8	33.8	33.8
4 Hours	66	41.3	41.3	75.0
3 Hours	29	18.1	18.1	93.1
2 Hours	2	1.3	1.3	94.4
1 Hour or less	9	5.6	5.6	100.0
Total	160	100.0	100.0	

Frequency Table 2: I use ICT in the following teaching and learning activities - Large Group Discussion

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
No	99	61.9	61.9	61.9
Unsure	38	23.8	23.8	85.6
Yes	23	14.4	14.4	100.0
Total	160	100.0	100.0	

Frequency Table 3: I use ICT in the following teaching and learning activities - Group Activities

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	77	48.1	48.1	48.1
No	49	30.6	30.6	78.8
Unsure	34	21.3	21.3	100.0
Total	160	100.0	100.0	

Screenshot showing the correlation between beliefs and practice

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	
Spearman's rho	Q1	Correlation Coefficient	1.000	.655**	.692**	.522**	.338**	.465**	.144	.371**	-.042	.432**	.131	.120
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.069	.000	.597	.000	.098	.130
		N	160	160	160	160	160	160	160	160	160	160	160	160
	Q2	Correlation Coefficient	.655**	1.000	.632**	.335**	.440**	.480**	.177	.003	.074	.274**	.268**	.244**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.031	.000	.352	.000	.001	.002
		N	160	160	160	160	160	160	160	160	160	160	160	160
	Q3	Correlation Coefficient	.692**	.632**	1.000	.500**	.343**	.418**	.249**	.335**	.078	.420**	.146	.198
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.001	.000	.327	.000	.066	.012
		N	160	160	160	160	160	160	160	160	160	160	160	160
	Q4	Correlation Coefficient	.522**	.335**	.500**	1.000	.484**	.403**	.373**	.498**	.136	.487**	.059	.123
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.000	.086	.000	.460	.120
		N	160	160	160	160	160	160	160	160	160	160	160	160
Q5	Correlation Coefficient	.338**	.440**	.343**	.484**	1.000	.369**	.234**	.374**	.252**	.294**	.086	.179	
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.003	.000	.001	.000	.281	.024	
	N	160	160	160	160	160	160	160	160	160	160	160	160	
Q6	Correlation Coefficient	.465**	.480**	.418**	.403**	.369**	1.000	.324**	.454**	.176	.396**	.349**	.260**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000	.000	.026	.000	.000	.001	
	N	160	160	160	160	160	160	160	160	160	160	160	160	
Q7	Correlation Coefficient	.144	.170*	.249**	.373**	.234**	.324**	1.000	.441**	.537**	.339**	.426**	.206**	
	Sig. (2-tailed)	.069	.031	.001	.000	.003	.000	.	.000	.000	.000	.000	.009	
	N	160	160	160	160	160	160	160	160	160	160	160	160	
Q8	Correlation Coefficient	.371**	.230*	.335**	.498**	.374**	.454**	.441**	1.000	.295**	.599**	.254**	.218**	
	Sig. (2-tailed)	.000	.003	.000	.000	.000	.000	.000	.	.000	.000	.001	.006	
	N	160	160	160	160	160	160	160	160	160	160	160	160	
Q9	Correlation Coefficient	-.042	.074	.078	.136	.252**	.176*	.537**	.295**	1.000	.140	.470**	.238**	
	Sig. (2-tailed)	.597	.352	.327	.086	.001	.026	.000	.000	.	.077	.000	.002	

Table Cross-tabulation for: How important is lecturing when using ICT and the use of ICT in the following teaching and learning activity: Lectures

Chi square	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	33.825	8	.001
Likelihood ratio	34.937	8	.000
Linear-by-linear association	18.107	1	.000
N of valid cases	160.		

- a. Cells (66.7%) have expected count less than 5. The minimum expected count is .23.

Table Cross-tabulation for: How important is lecturing when using ICT and the use of ICT in the following teaching and learning activity: presentation

Chi square	Value	df	Asymptotic Significance (2-sided)
Pearson chi-square	23.45	8	.003
Likelihood ratio	10.30	8	.244
Linear-by-linear association	3.22	1	.072
N of valid cases	160.		

- a. Cells (86.7%) have expected count less than 5. The minimum expected count is .05.

Table Cross-tabulation for: How important is lecturing when using ICT and the use of ICT in the following teaching and learning activity: large group discussion

Chi square	Value	df	Asymptotic significance (2-sided)	Exact sig. (2-sided)
Pearson Chi-square	22.564	8	.004	
Likelihood ratio	21.672	8	.006	
Fisher's exact test	20.588			.005
Linear-by-linear association	6.865	1	.009	
N of valid cases	160.			

- a. Cells (40.0%) have expected count less than 5. The minimum expected count is 2.38.

- b. The standardised statistic is 2.620.