

**School of Education**

**Perceptions of Asynchronous Blended Learning among Female ESL  
Students in a Saudi University**

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**This thesis is presented for the degree of  
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of  
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## **Declaration**

To the best of my knowledge and belief, this thesis contains no material previously published by any other person, except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number (HRE2017-0085).

Signature: Nouf Alzahrani

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## **ABSTRACT**

Despite a commitment by the government of Saudi Arabia to develop the capacity of women in taking a larger role in the development of Saudi society and economy, women are still significantly under-represented in the workforce. The problem focus of this thesis is the potential of recent developments of asynchronous English learning methods via internet technologies to enhance educational and ultimately, job opportunities of Saudi women.

The main objective of this study is to investigate perceptions of the effectiveness of asynchronous blended learning in developing English language skills among female higher education students in Saudi Arabia. Furthermore, this study is designed to address a gap in the literature because very few studies have been conducted to investigate the potential of asynchronous e-learning techniques to enhance the English language skills of such students. The main research intent of this thesis is to examine the extent of the positive impact that asynchronous e-learning has on the learning of English among female Saudi students.

The investigation entailed a mixed-method research design which involved the collection of quantitative cross-sectional survey data (Phase 1) and qualitative interview data (Phase 2) to study the effectiveness of blended asynchronous learning techniques in developing the English language skills of Saudi students. A sample of 103 Saudi female undergraduate students completed a self-report questionnaire in Phase 1, while 15 Saudi female undergraduate students also participated in qualitative interviews in Phase 2, where data on their attitudes towards the experience of asynchronous e-learning was collected.

Overall, the findings from this research showed that students had a comparatively positive evaluation of asynchronous e-learning; this teaching and learning method contributed to positive outcomes in terms of learning English and developing an autonomous learning style. Nevertheless, the study highlighted some problems with asynchronous e-learning in terms of the effectiveness of technical infrastructure; the effectiveness of instructor knowledge, ability or responsiveness and a lack of organisational support for delivering and providing effective and timely learning facilities and services.

The findings contribute to the knowledge on the efficacy of asynchronous e-learning as a promising method to meet Saudi Ministry's objectives of developing and deploying English skills and capacities amongst its people. Moreover, the Kingdom of Saudi Arabia is heading towards Vision 2030, which mainly involves empowering women as an effective figure in the society. Hence, the findings of this thesis imply that the employment of asynchronous e-learning methods provides a greater range of access opportunities to women, so that they can pursue their studies effectively and thus achieve a larger participation in the workforce. Nevertheless, it is important that some of the barriers and problems with asynchronous e-learning, as identified in this thesis, are addressed, in order to fully exploit its benefits.

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## إهداء

للغائب منذ زمن والحاضر في حنايا الذاكرة.. لإسمه الذي شرفني بحمله أربعة وثلاثون عامًا كتاج ماسي يرتفع به رأسي، وعقد لؤلؤ يزدان به جبدي.. لذلك الرجل الذي حرص أن يكمل أوراق إلحاق صغيرته، ذات الستة أعوام، بأول مدرسة في مشوارها العلمي، ولم يمهله القدر بأن يسعد بتوقيع أول شهادة امتياز تنالها.. لفقيد قلبي والذي أهديك خاتمة الشهادات لعلها الشهادة التي تليق بأن تهدي إليك، وأقول لك: سيظل رأسك مرفوعًا كما أعتدت أن يكون فصغيرتك لم تخذلك.

للإنسانة التي أثرتني وإخوتي على نفسها، ولم تشعرنا يومًا بفقد والذي، للتي أحاطتني بدعواتها ورعايتها وحبها ولم تنزل، لأمي أطال الله عمرها.

لأمي الثانية، المعلمة والموجهة الأولى والقنوة الرائعة، للقلب الرؤوم والصدر الحنون، لمن كنت أنتظرها كل يوم على عتبات باب المنزل من أجل قطعة الحلوى التي تأتيني بها في كل يوم تعود إلي من جامعتها، لشقيقتي الكبرى "ثريا" حفظها الله.

للأب الروحي الذي كان ولا يزال الشرارة التي توقد فتيل الحماس بداخلي كلما كادت همتي أن تنطفئ، للداعم والمحفز الأكبر خلال مسيرتي، لأخي الأكبر "محمد" أطال الله عمره.

لجميع أخواتي وإخوتي الذين كانت ولا تزال أصوات دعمهم وتشجيعهم ودعواتهم تحيطني وتدفعني إلى الأمام. وللصديقات اللواتي ما توانين عن مساعدتي وقت احتياجي للدعم والرأي السديد.

لأطفالي "تميم و فيروز" الذين ضحوا بأوقات لعبهم من أجلي، الذين احتملوا غيابي عنهم لساعات طوال، الذين كنت أودعهم على أعتاب حضانتهم كل يوم وأعينهم تفيض بالدمع وأيديهم التي لا يمكن الفكك منها سوى بمساعدة الحاضنات، بعمق الألم الذي كنت أشعر به وأنا أجر خطواتي بعيدًا عنهم لأتجه للجامعة أقول لهم " أحبكم، وكل ما فعلته كان من أجلكم".

للشخص الذي قاسمني أجمل أيام غربتي وأصعبها، الذي احتمل تقلبات مزاجي، و سار معي يديًا بيد طوال مسيرتي الماجستير والدكتوراه ولم يفلت يدي أبدًا، لوالد أطفالي وشريك الحياة .. الدكتور "نايف الزهراني".

للمعلمة الحق التي كان مستوى عطاها المعرفي يفوق مرحلتنا العمرية آنذاك، فتخرج لا شعوريًا عن محتوى الكتاب ثم تتراجع قائلة "لا أحب أن أدخلكم في متاهات"، تلك المتاهات التي أثارت شغف طفلة الثلاثة عشر ربيعًا، فتعلمت مبكرًا جدًا ماهو أكبر من عمرها، لمن علمتني أول حرف انجليزي، ولم يكن مجرد حرف وإنما كان شرارة موقدة دفعتني للبحث والتعلم، لمعلمة اللغة الإنجليزية "نورة يحيى عبدالقادر" أقول: "شكرًا لك من قلب أنت من أوقده".

لنفسي التي احتملت مسؤوليات عدة في آن واحد، وكان الثمن بأن تتغير.. لنفسي التي ضحت بإجتماعيتها وبعض من أسيائها التي تحبها من أجل أن تصل إلى هذه اللحظة.. لنفسي التي أنهكتها التعب ومع ذلك استطاعت أن تتكيف وتكون بخير، أهديتها حصاد جهدها وأقول: "أن لك أن تذوقي طعم النجاح".

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## **Chapter 1: Introduction and Thesis Overview**

### **1.1. Background to the Problem**

The Saudi government, in April 2016, announced a broad set of socio-economic reforms, known as Vision 2030 (Vision 2030, 2016) to put forward policies that have implications for the education of the Saudi people in general and women specifically. There is a commitment by the Kingdom of Saudi Arabia (KSA) government to develop the talents of women and invest in their productive capabilities, such that women take a significant role in the development of the society and economy of Saudi Arabia (Jamjoom & Kelly, 2013). Accessible education appears to be viewed as the main way to achieve this goal; however, Vision 2030 puts forward a more general commitment to providing an education that contributes to economic growth and aims to develop curricula that are more aligned to the job market.

The commitment to accessible education for Saudi women and girls was initially implemented by the KSA government in the 1960s, when the first primary school and a teacher training institute were opened (Jamjoom & Kelly, 2013; Saleh, 1986). Prior to this time, only men and boys were the beneficiaries of formal education, due to the prevailing Saudi attitude towards the education of females; education of girls and women was widely viewed in Saudi society as potentially corrupting the family and inconsistent with the teachings of Islam (Al Hariri, 1987). On the contrary, however, Islam encourages men and women to gain education equally and to work to have a good life (Al Rawaf & Simmons, 1991). With this attitude in mind, access to education by girls and women has grown significantly since 1960, when there was a total of 5,810 female students being educated across the Kingdom (Jamjoom & Kelly, 2013). By 2009, there were 6,855 schools for girls



(there are no co-educational schools in KSA) in primary and secondary education, with a student enrolment of 1,206,958 students (representing 4.5% of the total Saudi population). Such growth was not only due to a change in societal attitudes toward female education and policies of equal opportunity, but also, as Jamjoom and Kelly (2013) point out, because population growth has led to an increase in numbers among the younger age groups in KSA, and that there has been increasing social awareness on the importance of education. The oil-wealth of KSA also provided favourable economic conditions for heavy investment in education since the 1960s (El-Sanabary, 2006).

Investment in the higher education of women began with the opening of university places for women at King Saud University in 1976 (Saleh, 1986). Since then, the higher education sector has become one of the most important pillars of the nation and has received generous financial grants to assist in the creation of new universities, opportunities for women to complete higher education studies, as well as a great increase in the number of pure and applied science colleges (KSA Ministry of Education, 2009). According to the Central Department of Statistics and Information (CDSI, 2017), there are currently 25 public and nine private universities in KSA, enrolling a total of 1,359,447 students, with a slightly larger percentage enrolment being among women. Consistent with the significant focus on higher education (Smith & Abouammoh, 2013), Saudi universities are ranked highly, claiming 21 of the best 100 universities in the Arab region and the Saudi education system is ranked 36<sup>th</sup> in the world, with five Saudi universities ranked amongst the top universities in the world (QS Top Universities, 2018).

With few exceptions, each Saudi university accepts both male and female students, but men and women are segregated on campus and in classes. Nevertheless,

the government has established gender-based universities to ensure equal access to women in higher education such as Princess Nourah Bint Abdulrahman University (KSA Ministry of Education, 2009). At the same time, the significant proportion of women in higher education is yet to be fully reflected in the employment data.

Women are under-employed in Saudi Arabia and over-represented in low to middle-income jobs; in 2016, women's participation in the labour force was 22.2%, and this increased by only 0.23% in 2017, compared to men's participation, at 78.3% and 79.49% respectively (The Global Economy, 2016). Reflecting these trends, Elamin and Omar (2010) report that Saudi males express traditional attitudes and an aversion towards working females. Thus, Saudi women face challenges of gender division to participate fully in employment. Nevertheless, recent developments in Saudi higher education appear to provide improved access to educational opportunities for women and thus, a larger participation in the workforce.

As part of its strategy to facilitate even greater university student enrolments, the Ministry of Education (KSA Ministry of Education, 2009) developed a five-year development plan for the Saudi higher education sector. One of the key components of the plan is to increase the diversity of higher education programs (Rugh, 2002) through a greater use of information and communication technology (ICT), as part of a blended learning approach to education (Colbran & Al-Ghreimil, 2013). Asynchronous e-learning is one component of the blended learning approach and is defined as interaction between teachers and students which does not require them to be engaged at the same point in time (Ion, Vespan & Uta, 2013). Moreover, asynchronous online discussions allow students to digest information by reading others' thoughts, processing, reflecting, contributing and continuing through this cycle at the student's own learning pace.

In theory, the development of blended learning teaching methods via internet technologies provides a greater range of access opportunities to Saudi women so that they can pursue their studies effectively. This is especially the case with the advent of asynchronous blended learning in the Saudi educational system. Despite the potential attraction of asynchronous e-learning to Saudi women, there is little research on the effectiveness of this type of teaching and learning in a Saudi educational context. Much of the research in other cultural contexts has shown that students generally have positive attitudes towards e-learning, in terms of its helpfulness and capacity for enhancing advanced learning and exam preparation (e.g., Ishtaiwa & Abulibdeh, 2012; Wang, 2003; Zouhair, 2012). More importantly, participation in online learning has been found to lead to higher academic achievement outcomes (e.g., Northey, Buic, Chylinski & Govind, 2015). These findings have been reported in different cultural contexts, where the subject content involved English as a foreign language (e.g., Reifschneider, 2009; Snodin, 2013). At the same time, research has also shown barriers to the usefulness and ease of use of asynchronous e-learning, such as being able to speak to a teacher directly, digital literacy of teachers, connectivity issues, and the quality of online materials (e.g., Alkhatabi, 2014; Ishtaiwa & Abulibdeh, 2012; Prensky, 2001). The problem focus of this thesis is on the potential of recent developments of asynchronous English learning methods via internet technologies to enhance educational and ultimately, job opportunities of Saudi women.

## **1.2. Rationale of the Study**

Given the significant potential for asynchronous blended learning to provide educational opportunities to Saudi women, it is important and practical to possess knowledge of how e-learning is perceived. At the same time, learning English has a

relatively important role in contemporary Saudi society, as it is extensively used in business and trade communication, as well as for technology development. Thus, English has become the favoured mode of instruction in educational settings (Rugh, 2002). Yet, little research has investigated the perceptions of the effectiveness of asynchronous e-learning in Saudi Universities among female higher education students in the context of learning English as a foreign language. The current research aimed to address this gap in the research literature.

### **1.3. Aims of the Study and Research Questions**

The aim of this study is to investigate the perceptions of the effectiveness of asynchronous blended learning in developing English language skills among female higher education students in Saudi Arabia, who are undertaking English studies at Imam Mohammed Ibn Saud Islamic University (IMSIU), thereby shedding light on their perceptions of the effectiveness of asynchronous e-learning. Furthermore, this study is designed to address a gap in the literature because very few studies have been conducted to investigate the potential of asynchronous e-learning techniques to enhance the English language skills of such students.

Perceptions on the effectiveness of asynchronous e-learning is likely to be based on several variables. In one model, Selim (2007) integrated findings from the research literature to show that perceptions of the effectiveness of e-learning is based on attitudes toward the quality of learning information, the technical performance of an ICT system, and organisational factors such as instructor and institutional learning support. The research in this thesis extends and applies this model to investigate how attitudes toward the quality of learning information, the technical performance of an ICT system, and organisational factors may facilitate positive views on the

effectiveness of asynchronous e-learning specifically. As such, the research questions of this thesis are:

**RQ1.** To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ2.** How does the technical performance of the ICT system predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ3.** Why is asynchronous e-learning related to a positive impact on individual users' learning and learning outcomes?

**RQ4.** How do organisational factors (supportive instructors, learning community) predict learners' evaluation of the effectiveness of asynchronous e-learning?

There are several independent variables reflected in the RQs to include perceptions of the quality and effectiveness of ICT information, the technical performance of the ICT system, and organisational factors. The dependent variables include evaluation of the effectiveness of asynchronous e-learning and learning outcomes.

#### **1.4. Concepts and Definitions**

This section reviews the main concepts that reflect the RQs and provide the framework for investigating the effectiveness of asynchronous blended learning in developing English language skills amongst female higher education students in Saudi Arabia. The main concepts reviewed and defined can be seen in Table 1.1.

*Table 1.1. Definition of main concepts*

Concept	Definition
<i>Asynchronous e-learning</i>	The interaction between the teacher and students which does not require them to be engaged at the same point in time. Asynchronous online communication allows students to absorb information by engaging with the reading of others' thoughts and thereafter, processing, reflecting and contributing to their learning and continuing through this cycle at their own pace. Examples of technologies for asynchronous communications are e-mail, mailing lists, newsgroups, bulletin boards, blogs and wikis, as well as online discussion boards like Blackboard and Moodle (Ion, Vespan & Uta, 2013).
<i>Synchronous e-learning</i>	A simultaneous interaction between teachers and students with the more often used technologies of chat/IRC, whiteboard, audio-video streaming and videoconferencing (Ion et al., 2013).
<i>Blended learning</i>	A type of learning whereby students are taught via a combination of face-to-face and online media, which may entail synchronous and asynchronous communications (Ion et al., 2013).
<i>Web-based learning</i>	Web-based learning, or e-learning, includes online course content discussion forums via email, videoconferencing and live lectures (video-streaming via synchronous or asynchronous teaching). E-learning is an online space where students can interact with learning materials and with each other, but without the physical presence of an instructor.
<i>Learning Management Systems (LMSs)</i>	LMSs provide tools to deliver instructor-led synchronous and asynchronous online teaching. Moreover, LMSs give added support for teachers by assisting them in creating, administrating and holding online courses. LMS resources and activities may include course learning materials, quizzes, assignments and wikis (Lonn & Teasley, 2009).

<i>Quality and effectiveness of ICT information</i>	Attitude ratings of the ease of technology access and navigation, visual technology interface, and the information provided as related to asynchronous e-learning (Selim, 2007).
<i>Technical performance of an ICT system</i>	Attitude ratings of the reliability and effectiveness of the information technology infrastructure as related to asynchronous e-learning (Selim, 2007).
<i>Organisational factors</i>	Attitude ratings of the support provide by instructors and learning community as related to asynchronous e-learning (Selim, 2007)

### **1.5. Methodology**

The methodology adopted in this study is a mixed-method sequential research design entailing quantitative and qualitative research methods to develop knowledge on the efficacy of asynchronous e-learning of English among female Saudi university students. According to Ivankova, Creswell and Stick (2006), social science researchers employ mixed method designs as quantitative and qualitative research methods are insufficient by themselves to capture the details of a phenomenon or situation. This is due to the assumptions, biases and limitations of each method. Therefore, the strengths of both quantitative and qualitative methods have been combined to permit a more robust analytical framework. Importantly, the use of quantitative and qualitative methods to investigate the research questions of this thesis provided a certain level of validity to the findings through data triangulation (Creswell, 2012), as the data from each method could be cross-checked to more carefully determine the factors that promote satisfaction with asynchronous e-learning.

### 1.5.1. *Participants*

In the quantitative phase of this study, a sample of 103 Saudi female undergraduate students completed in English, a self-report questionnaire, on their perceptions of asynchronous e-learning: the *E-Learning Critical Success Factors Instrument* (Selim, 2007). In the qualitative phase of this study, 15 Saudi female undergraduate students participated in semi-structured interviews, where open-ended responses about their attitudes towards the experience of asynchronous e-learning were collected. In both phases, the study employed a non-representative convenience sample of participants. Although convenience sampling limits the generalisability of the findings as participants do not represent the full population, the method provided the advantages of being far less expensive, more efficient, and a simpler method to adequately address the research questions of this thesis (Jager, Putnick & Bornstein, 2017).

### 1.5.2. *Data collection and analysis*

Data collection was conducted in early 2017 with students attending the Faculty of Languages and Translation at Al-Imam Mohammad Ibn Saud Islamic University (IMSIU) in Riyadh. Based on the recommendations of Ivankova et al., (2006), quantitative data was collected first (Phase 1 data collection) then the quantitative data was collected (Phase 2 data collection) followed by an integration of the data from both data collection phases to address the research questions. The analysis of the quantitative cross-sectional survey data entailed inferential statistics and regression analysis to determine the extent of positive impact that asynchronous e-learning has on individual users' learning and evaluation of asynchronous e-learning. On the other hand, the analysis of the qualitative interview data entailed interpretive phenomenological investigation to derive significant themes in the



perceptions of female Saudi university students about asynchronous e-learning of English.

### **1.6. Significance of Study**

The findings contribute to the knowledge on the efficacy of asynchronous e-learning as a promising method to meet Saudi Ministry's objectives of developing and deploying English skills and capacities amongst its people. Moreover, the findings of this thesis imply that the employment of asynchronous e-learning methods provides a greater range of access opportunities to women so that they can pursue their studies effectively.

### **1.7. Assumptions and Limitations**

The design and execution of the research program of this thesis was based on several of assumptions. The first assumption was that theory on learning benefits of asynchronous learning provides a valid framework to address the research questions of this study. It was also assumed that the quantitative tools and measures employed to capture student perceptions of asynchronous e-learning are valid and reliable. Moreover, it was assumed that the qualitative data collection and coding procedures adopted in this thesis will objectively capture student perceptions of asynchronous e-learning and be free from subjective bias. The final assumption is that participants in the study will provide honest and accurate answers about their perceptions of asynchronous e-learning given the privacy and confidentiality of their responses will be insured.

The quantitative study was limited by the number of respondents to the survey E-Learning CSF Instrument, and the correlational nature of the research design does not produce information about definitive cause-effect relationships between using asynchronous e-learning and learner positive evaluations. Moreover,

the qualitative study was potentially susceptible to subjective interpretation of meanings by the researcher through biases and preconceptions. However, the use of quantitative and qualitative methods to investigate the research questions of this thesis provided a certain level of validity to the findings through data triangulation, as data from each method was cross-checked to more carefully determine the factors that promote positive evaluations of asynchronous e-learning.

### **1.8. Thesis Structure and Overview**

The general structure and plan of the thesis is to provide a review of the relevant literature to justify the aim of the research, and to present an empirical investigation of the effectiveness of asynchronous learning generally and, in particular, with Saudi female higher education students undertaking English studies. Chapter 2 provides a background of the socio-cultural context of Saudi education. Chapter 3 reviews contemporary theory and research on the nature and effectiveness of asynchronous e-learning. In Chapter 4, the research design and procedures employed in this thesis to address the research questions are outlined, with both quantitative and qualitative methods being selected to investigate the effectiveness of asynchronous e-learning. Then, Chapters 5 and 6 present the quantitative and qualitative findings respectively. Finally, Chapter 7 provides a review and integration of the central findings as they relate to the research questions of this thesis. It relates the findings to current research and provides a discussion of their theoretical and practical implications for the knowledge and application of asynchronous e-learning to educational environments generally and to the context of Saudi women undertaking undergraduate English studies specifically.

## **Chapter 2: Socio-cultural Context**

### **2.1. Chapter Overview**

This chapter provides a socio-cultural context to the study of the effectiveness of asynchronous blended learning in developing English language skills amongst female higher education students in Saudi Arabia. A description of the Saudi National context and a review of higher education in Saudi Arabia are provided in the first two sections of this chapter. This review shows the significant growth in Saudi higher education over the last 25 years in the number of centres of higher education and the number of student enrolments. The status of e-learning and English teaching in higher education, as well as the access constraints faced by women in Saudi Arabia, are also discussed in this chapter.

### **2.2. The Saudi National Context**

The progress of Saudi women in higher education can be understood from the perspective of the Saudi national context in terms of its history, people and culture. Saudi Arabia is a relatively young nation, where the teachings of Islam are predominant in most aspects of life (Saleh, 1986). Indeed, cultural attitudes in KSA have, until recently, restricted the role of Saudi women outside the home environment and limited their opportunities for education (Rugh, 2002). Nevertheless, more liberal cultural attitudes and significant national prosperity have led to a greater acceptance of women's place in higher education and the Saudi economy more generally (Jamjoom & Kelly, 2013). Responding to modern developments, the Saudi government signalled its intention through the Vision 2030 plan for the nation to be a leader in the Middle East and have a significant impact on

the world stage. This commitment has important implications on how women access and utilise higher education.

### *2.2.1. Background, History and Vision 2030*

The Kingdom of Saudi Arabia (KSA) is significant for its history and background as the birthplace of Islam and the site of Islam's holiest shrines, located in Mecca and Medina (Library of Congress, 2006). The official title of the King of Saudi Arabia reflects this history, as he is known as the Custodian of the Two Holy Mosques. Even though human existence in Saudi Arabia dates to at least 20,000 years ago, modern-day Saudi Arabia was established in 1930 by King Abdulaziz Al Saud. From an international view, the Kingdom of Saudi Arabia (KSA) has historical significance due to two major events. First, the region became the central location for the development of Islam in the 7th century, and second, in the mid-1900s, the discovery of large oil reserves catapulted KSA into the role of an influential economic power and geopolitical player. The country is currently a leading oil and natural gas producer and, as of 2017, has proven oil reserves equating to approximately 16% of the world's total (OPEC, 2018). Apart from these two events, Saudi Arabia has been relatively inconspicuous and isolated with regards to its global influence (Library of Congress, 2006).

For much of its history, the area associated with Saudi Arabia was ruled by a network of tribal leaders. However, in the mid-1800s, the Al Saud family emerged as a powerful and influential tribal group and took greater control in the territory, ultimately leading to a series of internal wars between 1902 and 1927 (Library of Congress, 2006). Ultimately, the family leader at the time, Abdulaziz Al-Saud, established himself as king of KSA, with absolute powers and, as set out by Saudi Arabia's Basic Law, one of his male descendants rules the country today.

By the middle of the 20<sup>th</sup> century, there had been little change to the traditional lifestyle of Saudis which had been practised for thousands of years (CIA, 2017). For the last 50 to 60 years however, there has been a rapid acceleration in the pace of Saudi life (Library of Congress, 2006). Saudis have always had some contact with the outside world through the flow of pilgrims to Mecca and Medina, but developments in transportation, technology and communication have greatly increased international interactions (Vassiliev, 1998). Moreover, many Saudi students have studied abroad (especially in the USA), and television, radio and internet have become common methods of communication and education (Colbran, & Al-Ghreimil, 2013).

With these developments, King Abdallah slowly modernized the Kingdom of Saudi Arabia during the period of 2005 till 2015. According to Smith and Abouammoh (2013), the key drivers of reform relate to the increasing global opportunities for Saudi citizens and businesses and the need to diversify away from an oil-dependent economy. Social and economic reforms were introduced, such as the expansion of employment and social opportunities for women, encouraging greater opportunities for foreign investment, developing the role of the private sector in the economy, and encouraging businesses to hire more Saudi workers, rather than being reliant on foreign workers (Library of Congress, 2006). Since Saudi Arabia joined the World Trade Organisation in 2005, the government continues to pursue economic reform and diversification to encourage foreign investment in the Kingdom.

Within this context, the position of women in Saudi society has changed markedly in the last 30 years. From a relatively disempowered position where KSA was a 'society of men' (Jamjoom & Kelly, 2013), women are now taking up greater

political and economic responsibilities. In 2011, women were given the right to vote and run in municipal elections, and 30 women were sworn into the previously all-male Shura consultative council in 2013; the first-time women have been able to hold any position in political office (BBC News, 2018). In 2015, women stood for municipal elections and 20 were elected, and both the Saudi Stock Exchange and a major bank named women as their chief executives in 2017. Women are represented across a broad spectrum of professions as doctors, university teachers and professors, as well as businesswomen. Contemporary Saudi women work in non-traditional spheres like scientific laboratories, in the press and other media, and in factories (Jamjoom & Kelly, 2013).

Looking to the future, the Saudi government, in April 2016, announced a broad set of socio-economic reforms, known as Vision 2030. The plan focusses on three pillars to provide KSA with a significant competitive advantage, including its status as a leading role in the heart of the Arab and Islamic worlds, its investment capacities to develop a more diverse and sustainable economy, and its geographic and strategic location at the ‘cross-roads’ of Asia, Africa and Europe, giving KSA a key role in international trade. Moreover, Vision 2030 emphasises the socio-economic theme of a “vibrant society, a thriving economy and an ambitious nation” (Vision 2030, 2016, p. 12).

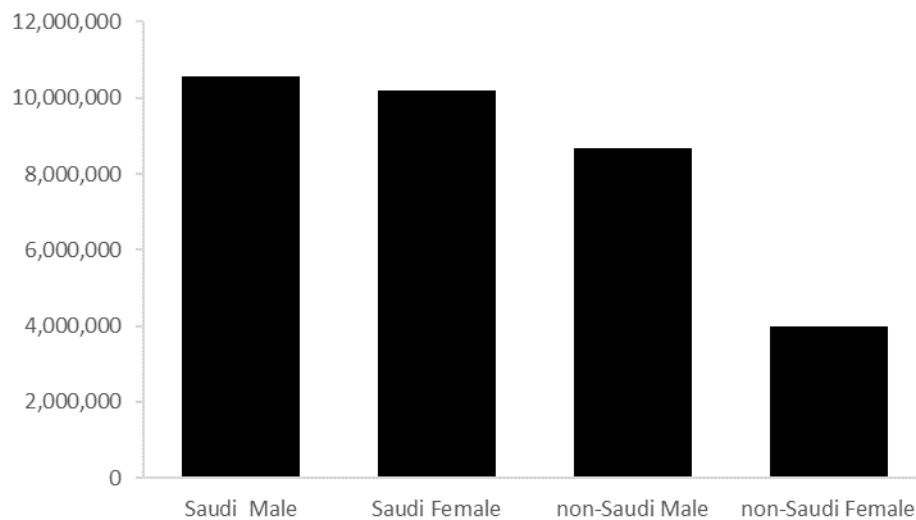
The pillars and themes of Vision 2030 are manifested in policies that affect education and women in KSA. Saudi women are acknowledged as a great asset to the country, especially since over 50% of university graduates are women. There is a commitment to develop the talents of women and invest in their productive capabilities, so that women can take a significant role in the development of the

society and economy of KSA. Indeed, one of the stated goals of Vision 2030 is “to increase women’s participation in the workforce from 22% to 30%” (Ibid, p. 40).

Accessible education appears to be viewed as the main way to achieve this goal; however, Vision 2030 provides a more general commitment to providing an education that contributes to economic growth and aims to develop curricula that are more aligned to the job market. All in all, Vision 2030 recognizes the role of women in education and the economy, but does not appear to provide policies or commitments that relate specifically to developing the educational or economic opportunities for women.

### *2.2.2. Culture and People*

The estimated population of KSA in July 2018 was 33,413,660 people (Saudi Arabia's Population statistics, 2018), with 38% of the total population being non-Saudi immigrants (see Figure 2.1). As such, Saudi nationals make up 62% of the population, with expatriates originating from a variety of countries, but mostly India, Syria, Bangladesh, Pakistan, Philippines, Indonesia and Egypt (CIA, 2017). As seen in Figure 2.1, the numbers of Saudi men and women are comparatively similar; however, there are more than twice as many non-Saudi men than women. According to the World Population Review (2018a), the major population centres in Saudi Arabia are the capital, Riyadh (4.205 million); Jeddah (2.867 million); Mecca (1.323 million); Medina (1.300 million) and Dammam (0.768 million).



*Figure 2.1. The Saudi population in 2018 (source: [www.stat.gov.sa](http://www.stat.gov.sa)).*

The birth rate in KSA is well above the world average, which is partly due to the policies of government that promote large families, and partly due to the large investment in health care made by the government (World Population Review, 2018b). In addition, the age demographic of the population is comparatively young; as can be seen in Figure 2.2, one-quarter of the population is younger than 15 years of age, compared to 18.2% of the OECD countries (OECD, 2019) and half the population of Saudi Arabia is under 30 years old. As stated in Vision 2030 (2016), “We will take advantage of this demographic dividend by harnessing our youth’s energy and by expanding entrepreneurship and enterprise opportunities” (p. 37). Hence, the leadership of KSA view education as pivotal to doing so.



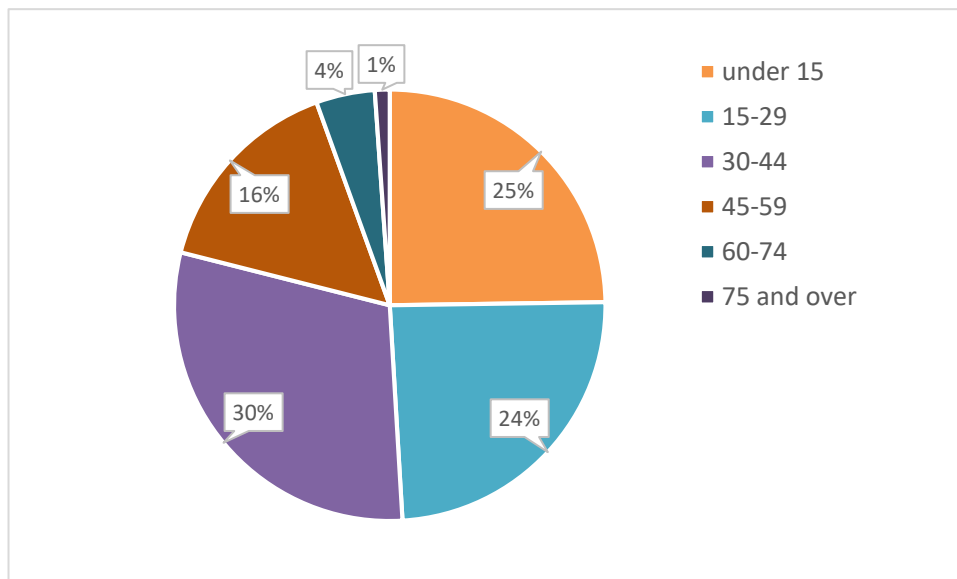
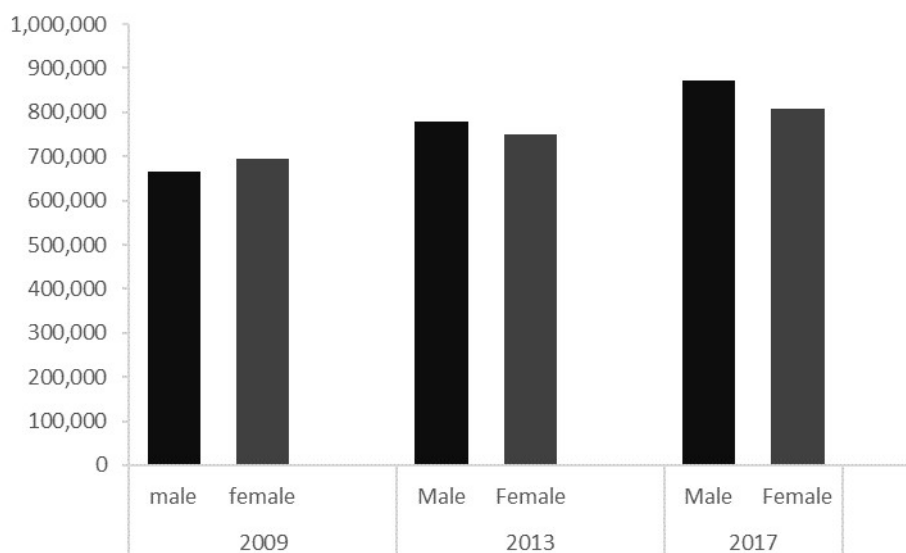


Figure 2.2. The age breakdown of the Saudi population, 2018 (source: [www.stat.gov.sa](http://www.stat.gov.sa)).

### 2.2.3. Higher Education in Saudi Arabia

The higher education sector in Saudi Arabia commenced with one university in 1957, enrolling 21 students, and grew to 7 universities, enrolling 23,437 students in 1975 (Saleh, 1986), and an enrolment of 123,848 students in 1988 (El-Sanabary, 1994). Since that time, Saudi's higher education has been developing strongly, largely driven by a period of rapid economic and social development during the 1970s. From 1975 to 2004, Saudi Arabia created a further eight public universities and another 17 public universities have opened across the Kingdom since 2004 (Clark, 2014; KSA Ministry of Education, 2009). According to KSA's Ministry of Education (MOE, 2009), higher education in the Kingdom of Saudi Arabia has witnessed significant development in all fields and at all levels. Since higher education is one of the most important pillars of the nation, it has received generous financial grants, which has assisted in the creation of new universities, as well as a great increase in pure and applied science colleges (KSA Ministry of Education, 2009).

These developments are the result of a huge demand for higher education; the number of students enrolled in Saudi universities doubled between 2008 and 2014 (Smith & Abouammoh, 2013). Indeed, the number of students graduating from high school has shown high growth rates, with more than 400% increase during 2008-2009; thus creating a significant demand on the higher education sector to facilitate these graduates. At the same time, from 1990 to 2004, female enrolments in Saudi universities experienced a 512% growth rate, compared to a male enrolment growth rate of 339.2% (Jamjoom & Kelly, 2013). As seen in Figure 2.3, the number of students (both male and female) in public institutions of higher learning in Saudi Arabia has continued to grow further in the last 8 years, between 2009 and 2017.



*Figure 2.3. Growth in the number of registered students in public institutions of higher learning in Saudi Arabia (source: www.stat.gov.sa).*

The most recent data on the number of student enrolment shows the significance of Saudi investment in higher education. Figures from the Central Department of Statistics and Information (CDSI, 2017) report that KSA was home to 28 public universities in 2017, enrolling a total of 1,680,993 students, with 871,794

male and 809,199 female students. Of these students, 1,257,551 were studying at the undergraduate level. King Faisal University (189,944) had the largest total enrolment, followed by King Abdulaziz University (177,249) and then, Imam Mohammed Ibn Saud Islamic University (173,846).

As part of its strategy to facilitate greater university student numbers, the MOE (KSA Ministry of Education, 2009) developed a five-year plan for the Saudi higher education sector. One of the key components of the plan was to increase the diversity of higher education programs, through a greater use of information and communication technology (ICT), as part of a blended learning approach to education. ICT is expected to provide more educational opportunities to all Saudi citizens through e-learning and distance learning programs. The concept of blended learning was introduced in Saudi Arabia in 2006, following the worldwide rise of blended learning approaches for the delivery of higher education content (Bonk, Kim & Zing, 2006). The Ministry of Higher Education has encouraged universities to reduce students' hours of class attendance through blended learning in order to reduce costs and increase access and enrolments (Alebaikan, 2011).

To that end, the Education Minister issued a 2008 decree to develop a national plan to engage the use of Information Technology (IT) for teaching and learning in the higher education sector via e-learning and distance learning technologies. Accordingly, the Higher Education Council ratified the distance learning bylaws in August 2010 for their application in higher education institutions in KSA. Alongside these developments, the Saudi Ministry of Higher Education also founded a National Center for e-learning and Distance Learning in 2005 (NCeDL, 2019). In its charter, the National Center for e-learning and Distance Learning aims to accomplish the following main objectives:

- Promote quality e-learning and distance learning applications in higher educational institutions.
- Contribute to expanding the capacity of higher educational institutions through e-learning and distance learning applications.
- Raise awareness and promote a culture of educational technology, e-learning and distance learning applications, and contribute to building a knowledge society.
- Contribute to the evaluation of e-learning and distance learning programs and projects.
- Support research and studies in the domain of e-learning and distance learning.
- Provide quality standards criteria for the designing, production and publication of digital educational material.

Although the learning environment in Saudi higher educational institutions, like other educational institutions globally, has changed markedly due to globalization and advancements in technology, these changes are not uniform across the system (Alamri, 2011). Some Saudi universities have encountered substantial challenges in their attempts to adopt the blended learning approach, including a lack of suitably trained teaching staff, technical problems such as insufficient e-learning facilities and infrastructure, and delays in redesigning curricula to accommodate blended learning. The first implementation of blended learning in Saudi Arabia was in October 2007 at the College of Applied Studies and Community Services at King Saud University in Riyadh, and involved only female students (Alebaikan, 2010). Five courses were offered in the blended learning mode, including English as a Foreign Language (EFL). The blend design was 70% online and 30% face-to-face class time. Soon afterwards, Princess Nourah University was established in Riyadh and is now one of the largest female universities in the world with a strong

commitment to e-learning through asynchronous instruction (Almohaimeed, Alhaidari, Alhamdan, Alfaries, & Ater Kranov, 2016).

English has a relatively important role in contemporary Saudi society, as it is extensively used in business and trade communication, as well as for technology development. In the education sector, English instruction is given in public and private schools, in higher education institutes and private language centres throughout Saudi Arabia (KSA Ministry of Education, 2009). According to Al-Seghayer (2014), a few years after the establishment of the Directorate of Education in 1923, the teaching of English as a foreign language was introduced into the Saudi educational system in 1928. English currently asserts several functions and enjoys an eminent status in various sectors (at all levels) within Saudi Arabia.

The growth of English use in Saudi Arabia is in response to the development of Saudi Arabia in a variety of ways (Al-Seghayer, 2014). The economy of the Kingdom of Saudi Arabia has been growing rapidly and has brought a large percentage of foreign manpower and trade, where English is the predominant language. As such, English is the only main foreign language that is taught in Saudi public schools. Moreover, English is also taught more broadly within private schools and universities, as well as industrial and government work settings. Saudis also show positive attitudes towards learning English, which is associated with the belief held by most Saudi citizens, that mastering English is an important element to developing Saudi's future prosperity (Faruk, 2013). Despite the significant investment in learning English, Al-Seghayer (2014) reports that the Saudi EFL curriculum demonstrates several constraints that hinder EFL teaching such as the limited time for teaching, a lack of learning and teaching resources and technological knowledge, and the limits of teaching approaches and methods.

As mentioned previously, the MOE expects these constraints to be minimised by incorporating e-learning technologies into teaching methodologies. A further constraint to teaching in general is the restrictions placed upon women in Saudi society. According to Pavan (2016), the four defining characteristics of education in Saudi Arabia are: a focus on the teaching of Islam; a centralized system of control and educational support; state funding at all levels and a gender segregation policy. Nevertheless, the development of blended learning teaching methods via internet technologies provides a greater range of access opportunities to women, so that they can pursue their studies effectively. This is especially the case with the advent of asynchronous blended learning in the Saudi educational system.

### **2.3. Summary and Conclusion**

The material reviewed in this chapter highlights several important factors behind the question of the effectiveness of asynchronous blended learning in developing English language skills amongst female higher education students in Saudi Arabia. Higher education in Saudi Arabia has experienced an enormous growth in the last quarter of a century, with significant and comparatively equal numbers of men and women undergoing higher education training. At the same time, the teaching of English as a foreign language has become a critical aspect of Saudi education.

Nevertheless, the Saudi higher education system faces the challenge of ensuring adequate teaching resources to serve the extensive demand for higher education. To a large degree, it is believed, by the MOE at least, that asynchronous blended learning provides a way to overcome these constraints by reducing access barriers to women and creating a more cost-effective and flexible method of teaching

in the higher education sector. Research on the nature and effectiveness of asynchronous blended learning is reviewed in the next chapter.

## **Chapter 3: Literature Review – E-Learning Theory and Research**

### **3.1. Introduction and Chapter Overview**

With the introduction of online learning in higher education, the teaching profession is likely to question assumptions about teaching and learning (Garrison & Kanuka, 2004). The higher education sector faces the challenge of ensuring that institutions meet the technological demands of students, while simultaneously working to safeguard higher-quality learning experiences and outcomes. The transformation of modern society through the advent of the internet and other information and communication technologies is clearly seen in the higher education sector. As Hicks, Reid and George (2001) claim, a transformation of the modern university requires that they “provide for a larger and more diverse cross-section of the population, cater for emerging patterns on educational involvement, which facilitate lifelong learning and include technology-based practices in the curriculum” (p. 143). An important element of such transformations is the capacity of online educational systems that allow students to be autonomous learners and a part of a community of learners at any place or time, without being bound by time, place or situation factors. This is the essence of asynchronous online education.

Asynchronous learning is a term employed to characterise the types of education activities and learning that can occur at different times or places and may also be labelled as distance learning (Ion, Vespan & Uta, 2013; Ishtaiwa & Abulibdeh, 2012; O’Connor, Mortimer & Bond, 2011). This term is normally used to describe the range of online and digital learning technologies and tools that allow students to learn with resources such as online lectures, discussion boards, email, practical exercises and quizzes, wherein students utilise the resources in their own time and instruction by faculty staff is not delivered in real time. Apart from these



resources, the asynchronous learning approach can include other instructional interactions, including email correspondence between students and teachers, blogs, podcasts and learning-management systems that provide learning materials, resources and correspondence on a specific course or subject.

According to Reese (2015), online education, including asynchronous blended learning, has developed over recent years to provide a method for students and teaching staff to communicate with greater flexibility and achieve greater learning autonomy. The rapid growth of digital technology in the late 20<sup>th</sup> century has led to contemporary students being native speakers of the digital language of computers, games and the internet (Prensky, 2001). As such, asynchronous learning provides a relevant learning environment for ‘digital natives’ to engage in a communication medium that is consistent with broader capabilities. In this context, teachers, or ‘digital immigrants’, are faced with the challenge of adapting their teaching and language to the communication style of their students (Prensky, 2001); asynchronous blended learning is an important teaching method in this direction.

At the same time, there is some discussion and debate about whether online educational options undermine educational objectives or offer significant benefits necessary to develop students and learners effectively (Morse, 2003). Critics of online learning environments and tools argue that asynchronous interactions are not engaging and rigorous enough to meet the standards of higher education (Arkorful & Abaidoo, 2015). Moreover, the assumption that the current generation of students are digitally literate is not borne out by reality, given the diversity of students’ backgrounds and the quality of supporting infrastructure (McMahon, 2014; van Schoor & Mischke, 2014). A middle ground between these two positions is, perhaps, best summed up by Reese (2015), who argues, “a balanced online environment

should provide a blend of both asynchronous and synchronous opportunities, which promote communication and collaboration among classmates and instructors” (p. 579); otherwise known as blended learning (Vaughan, 2010). Nevertheless, the effectiveness of asynchronous blended teaching and learning is a relatively open question.

This chapter reviews the relevant literature that informs the question of the effectiveness of asynchronous blended learning in developing English language skills amongst female higher education students in Saudi Arabia. In the next section (3.2), theories that inform and frame the benefits and effectiveness of asynchronous blended learning are reviewed. The later sections (3.3) and (3.4) of the chapter provide a review of empirical research and findings on factors that are associated with the effectiveness of asynchronous blended learning and describe research that has been conducted on the effectiveness of asynchronous e-learning in the Saudi higher education sector. The chapter concludes with a focus on the quality of this research and identifies open questions in the research literature on the effectiveness of asynchronous online learning (section 3.5).

### **3.2. Theory on the Benefits of Asynchronous Blended Learning**

Apart from the financial and organisational efficiencies and student access benefits of asynchronous teaching, there are several potential learning development benefits. In theory, asynchronous learning environments would likely encourage autonomous learning (Cameron, 1989) and develop students’ metacognitive skills and abilities (Schraw & Dennison, 1994). Moreover, asynchronous learning reflects the principles of andragogy, which proposes that effective adult learning entails a process of self-planning, self-discovery and self-regulation (Knowles, 1984). The rationale for such a proposition is developed in this section, suggesting that

asynchronous education has the potential to encourage students' learning autonomy and acceptance of responsibility for constructing meaning and understanding via their metacognitive development.

### 3.2.1. *Learner Autonomy*

Along with the need for competence and relatedness, the need for autonomy is assumed by the basic needs of the self-determination theory (Deci & Ryan, 2000), to drive human motivation and behaviour. In a general sense, autonomy is defined as an intrinsic need to experience personal volition and freedom to self-organise experience and behaviour, leading to higher intrinsic motivations (Deci & Ryan, 2000). As found by Deci, Schwartz, Sheinman and Ryan (1981), students of autonomy-oriented teachers reported greater intrinsic motivation to learn and higher self-esteem than students of control-oriented teachers.

From this perspective, learner autonomy has been defined in the research (e.g., Boud, 1981; Nguyen 2014) as when a student takes responsibility for his or her own learning by preparing, applying, checking and assessing their own direction and progressing towards building a set of new skills, in discussion and negotiation with their instructors. Indeed, Little (1991) proposed a set of advantages of learner autonomy, including the fact that learning should be more focussed and purposeful and have stronger immediate and long-term benefits. Moreover, autonomous learning allows for fewer constraints between learning and living, as opposed to more traditional, classroom-based and teacher-centred approaches to education. Finally, autonomous learning has the advantage of developing an individual's ability to act with responsibility in different elements of their life, thus leading to higher productivity and effectiveness as a member of society.

In theory, the autonomous learning approach provides several advantages to people, specifically to students engaged in online learning. According to Garrison (1997), these include the growth in planning, checking and assessing one's own learning (Garrison, 1997). Moreover, autonomous learning encourages students to be self-motivated, such that they exercise control of their own learning as self-directed learners (Deci & Ryan, 2000; Knowles, 1984). Indeed, a research study by Dang (2012) has also shown autonomous learning to be composed of elements like being able to check the learning process, set goals and initiate learning opportunities.

After the late 1990s, there have been several research studies to support the assumption that facilitating autonomous learning among learners would lead to educational and learning benefits (e.g., Benson, 2001; Dias, 2000; Littlewood, 1999). For example, Hobrom (2004) reported on qualitative interviews conducted with US students who were learning Arabic at a major university. The findings showed that autonomous learners took more control of their learning and were more motivated learners, such that they developed and displayed higher self-evaluation and self-monitoring skills. However, Nguyen (2014) recently reported that Vietnamese teaching faculty members were deficient in the skills and knowledge to apply an autonomy-based learner approach to their teaching, even though the government decreed teaching interventions in this direction. In fact, the teachers found it challenging to operate outside a teacher-centred educational approach, which involved embracing the 'western origin' notion of encouraging independent learning among their students.

Despite evidence that teachers find it difficult to implement methods to develop the autonomous learning style of their students, empirical research in the literature has generally supported the effectiveness of an autonomous learning style

in English language courses. In one study, Nguyen (2009) examined learner autonomy with Vietnamese tertiary students who were enrolled in English as a Foreign Language courses (EFL). In the first phase of the study, correlational data showed that learner autonomy was associated with the students' level of academic achievement. In the second intervention phase of the research, students were assigned to an experimental or control group. In the experimental group, the participants received metacognition training (MT) via classes focussed on developing skills in organizing, checking and assessing their learning. The intervention led to improved writing skills and language proficiency, as well as greater learner autonomy amongst the experimental group.

Similarly, Ma (2009) reported that Korean high school students had greater task persistence when they were encouraged towards autonomous learning. Okazaki (2011) reported that Japanese English students performed better and displayed more self-determination when they were supported towards learner autonomy. Another study by Aljasir (2009) further reported a significant positive correlation between language learning strategies and learner autonomy among female Saudi students who were taking English studies. Given that asynchronous learning requires a certain amount of independent learning, one might expect that the course content with asynchronous learning to be associated with improved capacity for autonomous learning amongst learners.

### 3.2.2. *Asynchronous Learning and Metacognition*

Asynchronous learning is also theoretically likely to encourage the development of metacognitive skills, because distance learning should allow and promote student reflection on the learning material (Jegede, Fan, Chan, Yum, & Taplin, 1999). According to Flavell (1979) and Livingston (1996), metacognition

refers to higher order thinking which involves active control over the cognitive processes engaged in learning. Put simply, metacognition can be defined as "thinking about thinking." Activities such as planning how to approach a given learning task, monitoring comprehension and evaluating progress toward the completion of a task are metacognitive in nature (Mezirow, 1990), and would appear to be an important by-product of distance learning.

Metacognitive students have the ability to think about, understand and manage their own learning (Schraw & Dennison, 1994). They also use reflective thinking to transform and regulate their learning (Mezirow, 1990). Students who possess metacognitive qualities also tend to be successful learners (Swanson, 1992; Zimmerman & Martinez-Pons, 1990). According to Garrison and Kanuka (2004), an emphasis of metacognition in education entails a shift from assimilating information to constructing meaning and confirming understanding in a community of inquiry. To be a critical thinker is to take control of one's thought processes and gain a metacognitive understanding of these processes (i.e., learn to learn).

In theory, a blended learning teaching context would likely provide the independence and increased control essential to developing critical thinking. Because metacognition plays a critical role in successful learning, it is important to determine if asynchronous blended learning environments can impact positively on students' capacity to better apply their cognitive resources through metacognitive control. Indeed, some research (e.g., Hsu, & Hsieh, 2011; Salas, Kosarzyski, Burke, Fiore & Stone, 2002) suggests that students with strong metacognitive skills benefit most in distance learning environments. Research findings on a range of asynchronous blended learning outcomes like stronger metacognitive skills are presented and reviewed in the following section.

### **3.3. Empirical Research on Blended Asynchronous Learning**

There have been several studies to investigate the efficacy of blended learning teaching approaches, including those that focussed on the benefits of asynchronous web-based instruction methods (e.g., Al-Dosari, 2011; Garrison & Kanuka, 2004). In general, most researches have employed cross-sectional research designs and have variously shown an association between the use of asynchronous blended learning approaches and positive outcomes, in terms of student satisfaction with blended learning, better grades and assessments, developing metacognitive abilities and promoting autonomous learning in students.

#### *3.3.1. Learner Satisfaction*

Several studies have investigated the general perceptions of asynchronous learning and show an association between the different benefits of asynchronous e-learning and high student satisfaction and enjoyment. For example, Wang (2003) found that satisfaction with e-learning was predicted by the quality of the content and learner interface, level of personalisation of the e-learning experience and capacity for e-learning to connect with other students and teachers to create a learning community. Ishtaiwa and Abulibdeh (2012) also reported that student satisfaction with asynchronous e-learning was associated with improved learning collaboration. Their qualitative findings showed that IT students found asynchronous e-learning to be enjoyable and that it enhanced their tutor-student and student-student interactions, as well as helped them to improve their understanding of the course content. As mentioned by one respondent, “one of the biggest strengths of asynchronous online discussion tools is improving my understanding of the course content through fostering true interaction with my professor, peers and content. I think these tools are fantastic to create an individualized instruction that meets my needs” (Ishtaiwa &

Abulibdeh, 2012 p. 151). Although some respondents indicated that a lack of timely feedback from instructors created a barrier to asynchronous instruction, most found the learning style to provide positive benefits.

Research has also shown an association between the effectiveness of asynchronous learning and the enjoyment of online education. Reifschneider (2009) investigated perceptions of the quality and effectiveness of online education among students, faculty members and administrators at a university in Brazil. The study entailed a cross-sectional design, wherein participants completed a survey that measured the recognition of the worth of online education, enjoyment of the online experience and different barriers to online education. The findings showed that participants generally agreed on the worth of online education as compared to face-to-face education. Linear regressions indicated that low student motivation negatively impacted on the perceptions of the quality of e-learning education, whereas learning effectiveness was predicted by the perceived enjoyment of online education and its worth, as compared to face-to-face education. Like Ishtaiwa and Abulibdeh (2012), Reifschneider (2009) also showed that barriers such as technology and connectivity issues were associated with perceptions of lower quality and effectiveness of online education.

### 3.3.2. *Autonomous Learning*

Other studies have shown an association between the delivery of asynchronous learning and the development of autonomous learning amongst learners. For example, a study by Snodin (2013) investigated the educational outcomes of a blended learning online approach to English language learning amongst Thai university students. Students participated in the study by completing questionnaires, interviews and learning journals, with additional data collected via



classroom observations. These research tools provided a triangulation of the data, to enhance the validity and reliability of the findings, which revealed some common themes across the data collection points. The overall findings from the open-ended interviews showed that students formed an autonomous learning style that was more efficient, as compared to instruction by traditional learning methods. The findings also showed that students were able to autonomously organise their resources in e-learning tools such as the course management system, when the direction of learning was supported by an instructor. Moreover, students were able to develop autonomous learning behaviours in this blended learning environment that were distinct and superior to learning via traditional face-to-face classroom instruction.

A more recent study by Pinto-Llorente, Sanchez-Gomez, García-Penalvo and Casillas-Martín (2017) also showed the positive effects of asynchronous tools on the autonomous learning of university students enrolled in EFL courses. Spanish university students ( $N = 358$ ) completed a module on English grammar via a blended learning approach and were given a pre- and post-module test of their perceptions of the efficacy of blended learning. The findings showed mostly positive perceptions and attitudes about the technological tools used for the asynchronous online component of the course (e.g., podcast, videocast, online tests, online glossary and forums). It was also found that most students emphasised the efficacy of the blended learning materials for improving their grammatical abilities (parts of speech, kinds of sentences and word formation); there was the perception that the improvement of their grammatical level was related to the efficacy of the blended learning model. Moreover, the students provided feedback to say that they had developed greater autonomy as a learner and organised their own pace of study and individual learning and highlighted the benefits of the e-activities to carry out continuous assessment.

In theory, an important antecedent of autonomous learning is self-efficacy, or the belief in one's abilities to succeed at a specific task, like learning (Bandura, 1982). Indeed, Prior, Mazanov, Meacheam, Heaslip and Hanson (2016) investigated the relationship between two important antecedents of self-efficacy in online learning: learning attitudes and digital literacy, and positive learning outcomes and engagement. Participants in the study were 151 Australian postgraduate business students who completed an online survey of their digital literacy, learning attitudes and learning outcomes. The findings showed that a positive student learning attitude and digital literacy significantly contributed to self-efficacy in an online learning environment. Importantly, learning self-efficacy had positive effects on the interaction with the learning management system (LMS), convener interaction and peer engagement.

### 3.3.3. *Metacognition*

Apart from showing positive effects on autonomous learning, the association between blended e-learning and the development of metacognition has also been shown in a study by Hsu and Hsieh (2011). The study investigated how demographic factors and learning performance and behaviour were associated with learning outcomes among nursing students engaged in a blended learning setting. Participants in the study were 99 senior undergraduate nursing students from a public Taiwanese nursing college who were asked to complete a cross-sectional survey that measured blended learning satisfaction, metacognition and performance outcomes after a course on ethics. The findings showed that student performance on the course was significantly associated with metacognition, time engaged with the internet and the frequency of online dialogues about the course content. Thus, the study showed that the time students invested in studying e-learning materials and the level of online

dialogue about the learning content predicted positive learning outcomes.

Significantly, the findings were consistent with the suggestion in the literature (e.g., Garrison, & Kanuka, 2004; Jegede et al., 1999) that blended asynchronous learning settings can contribute to positive learning outcomes by enabling self-regulatory and metacognitive development among students.

#### 3.3.4. *Learning Outcomes*

Empirical research on blended asynchronous learning also shows its positive impact on how students perform in terms of their grades. One of the few quasi-experimental research designs in the relevant literature by Northey, Buic, Chylinski and Govind (2015) investigated if Facebook could be employed to enable asynchronous learning opportunities that would supplement face-to-face learning exchanges. It was expected that this approach would provide a method to impact positively on student engagement and academic outcomes. The research participants in the study were Australian marketing students ( $N = 118$ ), who were randomly assigned to either an experimental group or a control group, wherein both groups received face-to-face instruction, but the experimental group also participated in Facebook interactions (asynchronous condition). After the completion of a 13-week course in marketing, students' level of engagement and final grades were compared between the experimental and control groups. Compared to students who only attended face-to-face classes, the analysis of results indicated that students were more engaged in learning and reported higher grades when they participated in blended learning via both asynchronous online learning and face-to-face on-campus classes.

A similar quasi-experimental design was also employed by Ge (2012) who found that synchronous learning provided students with unique help that could not be

obtained from asynchronous instruction. In the study, two English classes with 70 Chinese adult student e-learners received contrasting learning methods. While one class was instructed with a cyber asynchronous approach, the other was instructed with a blended learning methodology. The findings showed that students overall had improved their performance during the semester, but students under the blended learning method showed substantially more improvement than those who completed the subject under the cyber asynchronous method. Indeed, students under the blended learning teaching method reported that learning via this way provided them with assistance and knowledge, which was not available via the cyber asynchronous learning method.

#### *3.3.5. Summary of Findings on Blended Asynchronous Learning*

In summary, a series of findings on blended asynchronous learning over the last fifteen years have provided a range of insights into the efficacy of asynchronous blended learning and how students respond to learning via this method. In general, learners (and teachers) report positive attitudes and outcomes in relation to blended learning. Also, there appears to be a relationship between positive attitudes towards blended learning (e.g., enjoyment), learning self-efficacy and learning outcomes (e.g., assessment performances and engagement). Moreover, some research findings support the theory that asynchronous blended learning is likely to improve students' metacognition and develop autonomous learning amongst learners and students. In one study on the use of asynchronous blended learning for English as a foreign language (Ge, 2012), students reported that asynchronous learning was a significant benefit to their learning experience and outcomes.

### **3.4. Saudi Research on Asynchronous Blended Learning**

There have been several studies conducted in Saudi Arabia on the effectiveness of asynchronous blended learning. These investigations have included quasi-experimental and cross-sectional research designs with students and staff to measure their perceptions of e-learning and its effectiveness on learning outcomes. In general, the research shows that staff and students have positive attitudes towards online learning in blended and asynchronous learning modes. Moreover, experimental research has shown the effectiveness of e-learning on grades and academic achievement.

#### *3.4.1. Efficacy of E-Learning*

A few studies have investigated students' general perceptions about the efficacy of e-learning methods. For example, a survey by Alkhatabi (2014) of female students ( $N = 137$ ) studying in a Computer Science and Information College in Saudi Arabia found that not only do e-technologies such as Blackboard help students learn, but they also perceived barriers to its usefulness and ease of use, such as being able to speak to a teacher directly and the quality of online materials. Another research by Zouhair (2012) found that Saudi e-learning systems support and enhance face-to-face learning and instruction. Female undergraduate students ( $N = 25$ ) enrolled in a Computer and Information Science Department, in the college for women at Prince Sultan University, completed a survey about their perceptions of e-learning. The findings showed that students found the features of the LMS to be helpful and that it improved their comprehension and understanding of course materials. All in all, the students had favourable views about the elements of the LMS, especially the online chat sessions, as they appeared to be a convenient way for female students to discuss online group projects with their peers. Such findings

support the belief that e-learning presents itself as a practical alternative for women, so as to overcome travel restrictions placed on them in Saudi society.

#### 3.4.2. *Teachers' Perceptions of E-Learning*

Research has also investigated the perceptions of faculty and staff on e-learning technologies. In one study, Al-Dosari (2011) investigated the perceptions of the effectiveness of online learning of English amongst faculty staff ( $N = 20$ ) and full-time students ( $N = 212$ ) in a Saudi university. Participants in the study were given a reflection survey to provide background information on their satisfaction with the online courses in terms of professionalism, the program content and materials, and their recommendations for improving the content of this course, as well as the appearance of the online program. Staff responded that the benefits of online courses included its accessibility (70%), student centeredness (55%), flexibility (45%) and capacity to foster collaboration (35%).

At the same time, 80% of staff also reported that isolation and lack of face-to-face interactions were the main disadvantages of online course delivery, with a lack of technical skills cited by 50% of staff as another disadvantage of online learning. Responses from students showed that most (57%) reported that the online program was more convenient than face-to-face classes and that the appearance of the online program was attractive and easy to read (49%). Overall, 53% of students reported that they were able to master the online course material and they were able to apply their learning. From these data, it is evident that Saudi staff and students have reported the benefits of online learning of English, notwithstanding some of the disadvantages.

In a further study focussed exclusively on staff perceptions, Ziyadah (2012) investigated the attitudes of Saudi female faculty administrators and graduate

assistants ( $N = 492$ ) towards online education. Quantitative and qualitative data were collected from various settings, specifically from five government universities across Saudi Arabia. The findings indicated that Saudi female staff reported a number of factors as supporting online distance education, including personal motivation to use technology, reduced teaching load, release time, graduate training received, the opportunity to improve teaching and for scholarly pursuits, greater course flexibility for students and the ability to reach new audiences that cannot attend classes on campus. Despite the facilitating factors to support online learning, staff also reported a range of inhibiting factors that prevented them from participating in online education. These included a lack of distance education training, poor technical support provided by the institution and a lack of personal technical background, low levels of support from the institution's administrators, as well as a lack of release time for training and merit pay for the successful use of online education.

#### 3.4.3. *Academic Achievement*

In addition to showing positive perceptions about asynchronous blended learning amongst teaching staff and students, a few studies in Saudi Arabia have also investigated its effect on academic achievement. In one experimental study on performance outcomes, Al-Qahtani and Higgins (2012) investigated the differential effect of e-learning, blended learning and face-to-face learning on students' achievement. Students ( $N = 148$ ) from a university in Saudi Arabia, who were completing a 6-week course on ethics, were randomly assigned into two experimental groups (e-learning vs. blended learning), alongside a control group (face-to face teaching). Multiple-choice achievement tests were given to students prior to and after completing the learning course. Although the findings showed that the performance of students under each form of teaching method improved

significantly from the pre- to post-tests, blended learning showed the greatest improvement. Indeed, students under the blended learning condition showed significantly higher achievements (with a substantial effect size) on the post-test than students under the e-learning and face-to-face teaching methods. Moreover, the achievement of students under the e-learning and face-to-face teaching methods did not significantly differ from each other.

A further quasi-experimental research design by Freihat and Zamel (2014) investigated the effectiveness of a Massive Open Online Course (MOOC) on developing listening skills among Saudi EFL university students. Students were randomly assigned either to an experimental group who participated in a MOOC-designed course ( $N=20$ ) or a control group ( $N=20$ ) who completed the course with a CD and textbook. The students' listening skills were tested prior to and after completing a 4-week course on English listening skills. The findings demonstrated that students under the experimental condition showed significantly higher improvement in listening skills in terms of intensive, selective and extensive listening skills. From these findings and those of Al-Qahtani and Higgins (2012), it may be tentatively concluded that there are positive effects on academic achievement due to their participation in e-learning courses.

#### 3.4.4. *Limits of Saudi Research*

Despite the strong interest from many universities in Saudi Arabia in implementing asynchronous teaching technologies such as Learning Management Systems (LMSs), e-learning is a relatively new innovation in Saudi universities (Alkhatabi, 2014). Although there is some research on e-learning in the Saudi context, there appears to be a knowledge gap regarding a complete understanding of



the application of asynchronous blended learning methods and best practices in the university sector of Saudi Arabia.

At a policy level, there appears to be a strong focus in Saudi Arabia for developing blended learning approaches that include asynchronous web-based instruction to address the learning needs of women and the sociocultural obstacles they may face in pursuing educational opportunities. Although there is some research on the benefits of asynchronous blended instruction methods for Saudi women, the findings thus far are limited and there are very few studies on the effectiveness of asynchronous blended learning approaches to teaching English as a foreign language (e.g., Al-Dosari, 2011; Garrison & Kanuka, 2004). As Ishtaiwa and Abulibdeh (2012) conclude, more research is required to develop the knowledge of the benefits of asynchronous, blended, web-based instruction methods, as well as students' perceptions and evaluations of their own learning whilst using these tools. Such research is especially important for women, who would appear to be distinct beneficiaries of online learning and asynchronous teaching methods.

### **3.5. Chapter Summary and Conclusion**

This chapter reviewed the relevant theoretical and empirical research literature on perceptions of the efficacy of asynchronous e-learning. In theory, asynchronous blended learning would likely develop the metacognitive skills and autonomous learning capacities of learners. Whereas some research is consistent with these propositions, the findings are limited at this point. Much of the research has shown that students generally have positive attitudes towards e-learning. More importantly, participation in online learning has been found to lead to higher academic achievement outcomes. These findings have predominantly been reported in different cultural contexts and when the subject content has been English as a

foreign language. However, no study has investigated perceptions of the effectiveness of asynchronous e-learning in Saudi Universities among female higher education students in the context of learning English as a foreign language. Given the significant potential for asynchronous blended learning to provide educational opportunities to Saudi women, it is important and practical to have an awareness of their perceptions of e-learning. The aim of the research of this thesis is to address a gap in the knowledge about the effectiveness of asynchronous learning generally, and specifically with Saudi female higher education students undertaking English studies.

To address this aim, the research of this thesis entailed an investigation of a series of questions that were framed by the Information System-Success/Impact model (e.g., Alkhalaf, Drew and AlHussain, 2010; Myers, Kappelman & Prybutok, 1997). This model synthesised a range of factors that may impact on the success of IT by positing four general constructs that drive the success and effectiveness of IT systems in terms of usage and user satisfaction: the quality of information produced; the performance of a system from a technical perspective; the impact on individual users and the impact of the relevant organisation. In theory (Myers et al., 1997), user satisfaction with IT would relate to the effectiveness of information in terms of its quality, availability, accuracy and timeliness. Moreover, the performance of a system from a technical perspective reflects its ease of use, usefulness, as well as flexibility and availability. At the same time, the success of an IT system relates to how well it impacts on the individual in terms of its benefits and how well a system meets individual needs for efficiency and making confident and efficient decisions. The fourth general construct of organisational factors reflects how an IT system is integrated with organisational background factors with respect to productivity,

efficiency, cost-benefits and meeting customers' needs. From the perspective of the Information System-Success/Impact model (Myers et al., 1997), individual, organisational, information quality and technical factors would form the key components and correlates of asynchronous learning. By implication, asynchronous learning environments with positive individual, organisational, information quality and technical factors are likely to facilitate positive learning experiences (e.g., satisfaction and engagement) and learning outcomes (e.g., enhanced performance, autonomy, and metacognitive skills). As such, the research questions of this thesis are:

**RQ1.** To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of the effectiveness of asynchronous e-learning?

This research question is designed to explore the positive relationship between the quality and effectiveness of ICT information and the learning outcomes, as well as learner evaluation of the effectiveness of asynchronous e-learning, which it predicts.

**RQ2.** How does the technical performance of the ICT system predict learners' evaluation of effectiveness of asynchronous e-learning?

This research question is designed to investigate, through quantitative/qualitative methods, how the technical performance of the ICT system predicts learners' evaluation of the effectiveness of asynchronous e-learning.

**RQ3.** Why is asynchronous e-learning related to a positive impact on individual users' learning and learning outcomes?

Through a qualitative method, this research question is designed to investigate the reasons behind the positive impact on individual users' learning and

learning outcomes, based on an interpretation of students' responses to semi-structured interviews.

**RQ4.** How do organisational factors (supportive instructors, learning community) predict learners' evaluation of the effectiveness of asynchronous e-learning?

This research question is designed to investigate the effect of organisational factors on learners' evaluation of the effectiveness of asynchronous e-learning.

Overall, it was expected that higher ratings of the effectiveness of asynchronous learning, in terms of the learning information produced; the performance of a learning system from a technical perspective; the positive impact on individual users and the impact of the relevant organisation will be positively correlated with more positive evaluations of the effectiveness of asynchronous e-learning and enhanced learning outcomes.

## **Chapter 4: Methodology**

### **4.1. Overview of Chapter**

This chapter provides details of the methodology undertaken in this study to address the research questions. The first section (4.2) provides details of the research design, in which a mixed-method sequential explanatory approach was taken for data collection in two phases: a quantitative phase (self-report survey) and a qualitative phase (semi-structured interviews). The next sections describe the study context (section 4.3), the sampling and participant selection methods of this study (section 4.4) and then the materials and procedure that were adopted to address the research questions (section 4.5). The approach to the analysis of the data and methods to meet the ethical requirements for research with human participants are described in the following sections (4.6) and (4.7). Finally, the results from a pilot test of the materials and procedures employed in this study are reviewed and analysed in the penultimate section of this chapter (4.8), before a summary of the chapter is provided (section 4.9).

### **4.2. Research Design**

The research paradigm adopted in this study was a mixed-method sequential design entailing quantitative and qualitative research methods to address RQ1, RQ2, and RQ4 and thereby develop knowledge of the efficacy of e-learning. At the same time, qualitative research methods and data were considered appropriate for addressing to address RQ3. This was because RQ3 focussed on individual users' learning outcomes which may vary according to learner's qualitative perceptions. Nevertheless, all sources of data will be integrated via the discussion of the findings to address the aims of this research. According to Ivankova, Creswell and Stick

(2006), social science researchers employ mixed-method designs as quantitative and qualitative research methods are insufficient by themselves to capture the details of a phenomenon or situation. This is due to the assumptions, biases and limitations of each method. In theory (Creswell, 2012), the strengths of both quantitative and qualitative methods are combined to permit a more robust analytical framework and overcome their respective limitations.

The quantitative method reflects a positivist paradigm which is underscored by a philosophy of science which assumes that measurements of the material world are the most reliable basis for generating knowledge (Campbell, 1957). Positivism adopts the scientific method, which assumes that knowledge is developed through formulating empirical questions, systematic observation via agreed-upon methodologies, gathering data and submitting it to quantitative analysis and then, integrating the information to form an interpretation of the findings regarding research questions and hypotheses (Bryman, 2012). The scientific method generally entails a test of the effect of a predictor variable on an outcome variable via controlled experiments or using surveys to establish and isolate cause-effect relationships, while at the same time controlling for extraneous variables.

Despite the scientific precision that quantitative methods provide, there are several limitations that restrict its validity and generalisability. For example, constructs like attitudes or beliefs are abstractions that can only be measured indirectly and without 100% accuracy (Onwuegbuzie & Leech, 2005). Moreover, such measurement is also susceptible to respondent biases like acquiescence bias, extreme responding or insufficient effort (Huang, Curran, Keeney, Poposki, & DeShon, 2012). A more general limitation of quantitative methods is often the narrow focus of inquiry in order to achieve control over extraneous variables and

isolate cause-effect relationships (Treagust, Won & Duit, 2014). As a result, quantitative methods often take little account of the social and cultural contexts of observations, in that the research findings often don't reflect real-world situations. In contrast, qualitative research methods open the possibility of discovering broader social and contextual factors that may underlie the strength of an attitude or belief, or even explain a cause-effect relationship.

Qualitative research methodologies are informed by an interpretivist phenomenology and assume that knowledge is developed by focussing on understanding what an experience, event, and/or state is from the perspective of the participant (Howitt, 2016). As such, the interpretivist approach assumes a certain level of relativity in research. People's individual perspectives on the same topic may differ, but nonetheless, each provides a point of valuable and potentially rich data (Treagust et al., 2014). Moreover, the interpretivist perspective acknowledges that background factors to a research question, such as social context and culture, are important aspects of empirical inquiry. Interpretivist research methods include several approaches to gathering data, including semi-structured interviews, case studies, observational research, focus groups and ethnographies. Ordinarily, the data generated from these methods is subject to reflection and content analysis and coded to develop themes and general impressions of the findings that speak to the specific research focus (Howitt, 2016).

Whereas qualitative methods provide the opportunity to generate deeper and contextual explanations of a phenomenon, this methodological approach has several limitations. As noted by Willig (2008), qualitative methods do not provide the researcher with objectivity and control over extraneous factors. Indeed, researchers may be susceptible to subjective interpretation of meanings in the data through their

own biases and preconceptions (Howitt, 2016). Moreover, qualitative research methods do not provide cause-effect relationships that are generalisable or have significant predictive capacity (Barbour, 2000). Finally, qualitative research can be relatively time-consuming and labour-intensive (Treagust et al., 2014). Conducting and interpreting interviews entails a significant investment of resources, which is likely to limit the sample size and thus, further limit the generalisability of findings.

The pragmatic approach of combining quantitative and qualitative research methods nonetheless, overcomes several limitations inherent in both methods (Onwuegbuzie & Leech, 2005). As such, the current study employed a sequential, mixed-method design (Ivankova et al., 2006) to collect quantitative survey data (Phase 1) and qualitative interview data (Phase 2) to investigate the effectiveness of asynchronous blended learning in developing English language skills amongst female higher education students in Saudi Arabia. The approach of employing a mixed-method design provides a way to get the best from two relatively distinct research techniques to generate objective data for statistical analysis, together with data that reflects the subjective views and beliefs of the participants (Creswell, 2012). In addition, the combined use of quantitative and qualitative methods potentially provides evidence of greater validity of findings through data triangulation, as the data from each method can be cross-checked for convergence and corroboration of the same phenomenon (Onwuegbuzie & Leech, 2005).

The steps to be taken for this sequential, mixed-method design are illustrated in the model presented in Figure 4.1, which is adapted from the work of Ivankova et al. (2006). The model shows the sequence of the research activities in this study, specifies the data collection and analysis procedures and lists the products or outcomes from each stage of the study. Moreover, the model identifies the methods



employed to validate the findings, illustrates the steps in the research procedure, as well as states when an integration of findings from the qualitative and quantitative phases will occur.

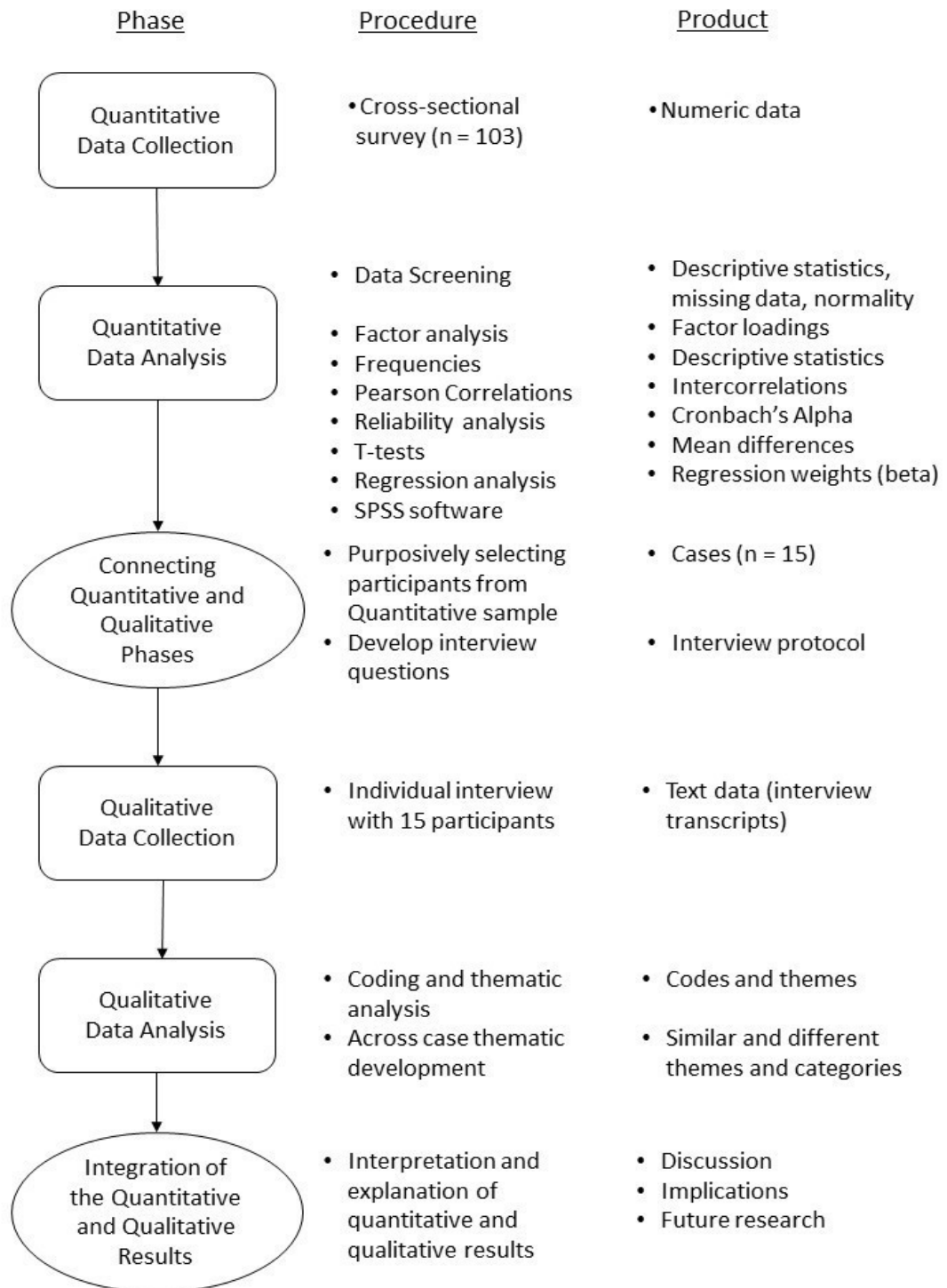


Figure 4.1. Visual model for sequential mixed-method design employed in this study.

### **4.3. Study Context**

The data was collected from the one institution at the Faculty of Languages and Translation at Imam Mohammad Ibn Saud Islamic University (IMSIU) in Riyadh, the capital city of Saudi Arabia. Although execution of the study at one institution limits the generalisability of the findings, IMSIU is one of the largest Saudi universities with almost 200,000 enrolled students and over 6,000 faculty members. Moreover, being a staff member working in the same faculty, provided a level of convenience for me to efficiently collect the sample from the same environment.

### **4.4. Sampling and Participants**

The sample of this study was a group of Saudi female undergraduate students who were taking English Language courses via asynchronous blended learning at my fieldwork university. All students were drawn from the same campus and they were studying at the same level (level 7). Students were visited in classes, at the first stage, and asked to complete a survey questionnaire on asynchronous e-learning (Phase 1). In Phase 2, a small group of the students were invited to participate in a semi-structured interview on their perceptions of asynchronous e-learning.

Participants in the quantitative phase of the study were a non-representative convenience sample of female students engaged in higher learning of English as a second language. Given that the analytical technique entails a linear regression with four predictors of learners' evaluation of asynchronous e-learning, a power analysis (using previously established data collected under similar conditions) indicates that a total sample size of 80 participants would provide a medium effect size  $d = 0.25$  for

the quantitative phase of the study, based on prior research with a similar instrument (Al-Dosari, 2011; Selim, 2007).

In the qualitative phase of the study (Phase 2), student participants were purposively recruited to engage in semi-structured interviews about their experiences of asynchronous blended learning in developing their English language skills. Participants were sampled until the data generated from the interviews reached saturation point, where collection of more data did not provide any new information or had little or no impact on the quality and quantity of data already collected (Guest, Bunce & Johnson, 2006). As a benchmark sample size, Guest et al (2006) found that the saturation point occurred after 12 interviews with a non-probabilistic sample. To determine the saturation point, each interview was reviewed in succession regarding the data that was generated, so as to address the main research questions and expectations.

#### **4.5. Procedure and Materials**

##### *4.5.1. Phase I*

In the quantitative phase of this study, a convenience sample of participants was recruited to complete a pencil-and-paper questionnaire to generate quantitative data on their attitudes toward asynchronous learning methods and specifically, to provide responses to the research questions. Participants were asked to complete the 53-item e-learning evaluation Critical Success Factors (CSF) tool, as developed by Selim (2007) and was applied on a sample of students from United Arab Emirates University (UAEU). This version was adopted with minor amendments by updating the name of the study context to be IMSIU instead of UAEU.

Factor analysis of IS success/impact survey questions by Selim (2007) with a sample of responses from 558 male and female UAE university revealed four

factors that reflect several distinct attitudes toward asynchronous e-learning. The first factor was attitudes towards instructor characteristics including their attitude towards the technology, teaching style, and control of the technology. The second factor was student characteristics including their motivation, technical competency and interactive collaboration. The third factor that emerged was attitudes towards the effectiveness of the technology in terms of its reliability, richness, and consistency. A fourth factor reflected attitudes towards the university and institutional support of asynchronous e-learning. Selim (2007) reported high-quality evidence of reliability and validity for the 4-factor IS Success/Impact model where all validity coefficients on each item of the 4-Factor model were above .75. Moreover, the validity of employing the 53-item e-learning evaluation of critical success factors in this study was enhanced by providing a culturally equivalent measure (Van de Vijver & Poortinga, 1997), due to the similar shared cultural elements (between the UAE and Saudi Arabia) such as Islamic values and beliefs.

Items on the E-Learning CSF Instrument were rated by participants on a 6-point, forced-choice Likert-scale, where 1 = *Strongly Agree* and 6 = *Strongly Disagree*. The forced-choice method of omitting a mid-point *Neutral* response was adopted to ensure that participants gave a definite positive or negative view, rather than 'opting out' with a neutral response. The E-Learning CSF Instrument assessed the students' perceptions of four general themes: the quality of Instructor Characteristics, Student Characteristics, Technical Support and General Support relating to e-learning. Sample items from each scale are shown in Table 4.1, with the full E-Learning CSF Instrument included as Appendix A.

*Table 4.1. Sample items from the scales to measure using the E-Learning CSF Instrument (Selim, 2007)*

Scale	Sample items
Instructor Characteristics	The instructor is active in teaching me the course subjects via e-learning. The instructor encourages and motivates me to use e-learning. The instructor explains how to use the e-learning components.
Student Characteristics	The e-learning encourages me to participate more actively in the discussion than the traditional methods. I am not intimidated by using the e-learning based courses.
Technical Support	Overall, the Information Technology infrastructure is efficient. Information was well-structured/presented. I can rely on the computer network.
General Support	I can access the central library website and search for materials. I think that the IMSIU e-learning support is good. There are enough computers to use and practice.

As presented in Figure 4.1, the validity and reliability of the e-learning attitude scale was assessed via factor analysis and an investigation of the intercorrelations and reliability of each scale. According to Arjoon, Xu and Lewis (2013), confirmatory factor analysis provides a test of the quality of the internal structure of a measure and thus its validity, whereas Cronbach's alpha provides a test of its internal consistency and reliability. It was expected that the e-learning attitudes scale would demonstrate evidence of its validity and reliability to quantitatively measure participants' perceptions of the effectiveness of asynchronous learning.

The data generated from the quantitative phase of this study was employed to test the research questions via multiple regression analysis, as each research question focussed on the prediction of learner evaluations, as the outcome of different attitudes towards asynchronous e-learning. Each of the asynchronous e-learning scales was assigned as an independent variable in the regression analysis, to test the extent at which each factor predicts positive evaluations of asynchronous e-

learning via an assessment of regression beta-weights. In view of this, regression analysis was employed to test the following research questions:

**RQ1.** To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ2.** How does the technical performance of the ICT system predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ4.** How do organisational factors (supportive instructors, learning community) predict learners' evaluation of the effectiveness of asynchronous e-learning?

#### 4.5.2. Phase 2

Drawing from the sequential mixed-method design of this study (Ivankova et al., 2006) and as shown in Figure 4.1, Phase 2 of this study entails a qualitative methodological approach and draws on the interpretive paradigm by investigating and addressing the research questions using semi-structured interviews. Participants from Phase 1 of the study were purposefully selected to participate in a semi-structured interview. The qualitative method of Interpretive Phenomenological Analysis (IPA), (Smith, 2004; Smith & Osborn, 2003) was adopted, as it provides an accepted approach to research questions that require an understanding of people's thoughts, feelings and attitudes as a function of their social and cultural context.

The IPA method reflects the interpretive paradigm, wherein participant's own words were interpreted to generate meanings and themes about the effectiveness of asynchronous e-learning in a Saudi University from the female students' perspective. IPA provided an approach wherein the researcher can take an objective view of a participant's unique circumstances, while at the same time, being careful about personal biases, so that there is an empirical approach to tackling the relevant

research questions and issues. Based on the suggestions of Smith (2004), several levels of objective approach were adopted in the interviews, including empathic listening and responses to participant's thoughts, attitudes and emotions, as well as a more interpretive position of participants' own words in order to generate a conceptual understanding of their perspectives on asynchronous learning.

To that end, the semi-structured interviews directly asked participants a range of open-ended questions to address the research questions of this study, following the full interview protocol included as Appendix B. To assess their general perceptions of asynchronous e-learning, participants were asked questions like:

*Please describe your overall experience of asynchronous learning methods; Tell me how asynchronous education methods have developed your ability to learn independently and How has asynchronous learning impacted on your performance in exams and tests?.* Participants were also asked to share their thoughts on the quality of the learning environment and learning materials, with questions such as: *Please comment on the quality of the material you work with in this learning environment; Describe how much interaction you have with the content and instructors in asynchronous blended e-learning and How do the technical requirements for asynchronous learning meet your learning objectives?.* To ensure that the students understood the term 'asynchronous e-learning' and the concepts with which it is related, an information sheet was distributed prior to the interviews to explain the terms and the purpose of the research, in addition to an oral explanation (where necessary) of whatever they misunderstood.

To ascertain participants' evaluation of asynchronous learning, participants were asked to: *Describe the positive and negative aspects of asynchronous blended e-learning according to the learners' conceptions; What are the benefits and*

*drawbacks of asynchronous learning in your experience?*. Participants were also asked to: *Comment on the level of satisfaction (or dissatisfaction) you have with asynchronous learning and Provide a description of how you find asynchronous learning to be superior or more advantageous than traditional face-to face educational techniques*. Finally, participants were asked to: *Comment on any other aspect of asynchronous learning that you think would improve its quality and the experience for students*. Interviews and interview responses were in English as participants speak English as a second language.

Altogether, the sequential mixed-method design employed in this study generated quantitative and qualitative data to understand Saudi female students' perceptions of asynchronous e-learning. As shown in Figure 4.1, the quantitative data was a numerical measure of the strength of student attitudes toward asynchronous e-learning. Moreover, the qualitative data was in the form of text, based on the responses of participants to interview questions about their attitudes towards asynchronous e-learning. The methods and procedures employed to analyse this data are presented in the next section.

## **4.6. Analysis**

### *4.6.1. Phase 1*

The analysis of data generated from the quantitative phase entailed the use of inferential statistics on the numerical data produced by the cross-sectional survey of participant attitudes toward asynchronous e-learning and followed the recommendations of Tabachnick and Fidell (2013). First, confirmatory factor analysis was employed to test the quality of the internal structure of the attitude survey and thus, its construct validity. Then, Pearson's correlation statistic was used to test the relationship between the scales of the measure of asynchronous e-learning



attitudes as a further indication of its validity. Cronbach's alpha was also calculated to test the internal consistency and reliability of the scales of the measure of asynchronous e-learning attitudes. Descriptive statistics were then used to test the normality assumptions and t-tests were employed to investigate the strength of asynchronous e-learning attitudes among participants. Finally, the numerical data was subjected to multiple regression analysis, wherein each of the e-learning scales was assigned as an independent variable in regression analysis, to test how much each factor predicts positive evaluations of asynchronous e-learning, via an assessment of regression beta-weights.

#### 4.6.2. *Phase 2*

Analysis of the data generated from the qualitative phase (Phase 2) of the study proceeded through the five qualitative data analysis stages, as described by Willig (2008), and was facilitated by employing the NVivo qualitative data analysis software. The first stage of qualitative analysis included transcription and reading of the interviews to develop some preliminary thoughts and overall impressions about the participants' responses to the questions (Bazeley & Jackson, 2013). The second stage entailed an analysis of themes in the text that reflect the main research questions and concepts in this study (Lewins & Silver, 2014). In the third stage, the themes were related to each other to generate an overall impression of shared meanings or references in the range of participant responses (Braun & Clarke, 2006). From this data, the fourth stage involved the development of a summary table of the themes identified in each interview and included participants' quotes to underlie the theme or meaning. The final stage reviewed the summaries from each interview to develop and produce an overall perspective on participants' perceptions of asynchronous e-learning.

Consistent with the interpretive paradigm, the method of IPA employed in the study focussed on an interpretation of the data based on interviewees' own words to generate a conceptual understanding of their perspectives on asynchronous e-learning (Smith & Osborn, 2003). Based on the sequential mixed-method design of this study (Ivankova et al., 2006), data from both the quantitative and qualitative parts of this study were combined to generate an overall perspective on the research questions, focussing on the development of knowledge of student attitudes toward asynchronous e-learning.

#### **4.7. Ethical Issues**

The main step to mitigate ethical issues with research on human participants in this thesis was to provide an informed consent statement to people who agreed to participate in the study. The challenges of addressing ethical principles were addressed by providing participants with relevant information about the research, before obtaining their consent and undertaking the research (see Appendix C). More specifically, the informed consent process ensured that participants were informed about the purpose of the research, its expected duration and procedures, their right to decline to participate and to withdraw from the research once it has started, as well as the anticipated consequences of their participation. Participants were also advised about potential risks, discomfort or adverse effects of the research, although none were expected, given the rather low risk nature of the research materials and procedures. Participants were also advised of any prospective research benefits, and if there were any limits of confidentiality, such as data coding, disposal, sharing and archiving.

To ensure the confidentiality of their responses, participants were asked NOT to provide their names; data were referred to by number or code only, thus

ensuring the confidentiality of results. By ensuring the confidentiality of responses, as well as having a choice to decline to participate, it mitigated any pressure on the respondents to participate in the study, given that the researcher is a member of staff and thus, in a relative position of power. Students have never been taught by the researcher and there was no previous relationship between them. Overall, the research methods adopted in this study was adopted to ensure that the participants' responses were confidential and that their privacy was respected. It is worth noting that the responses were de-identified and only used for the purposes of this research. Furthermore, prior to commencement of the study, the proposed research was checked and approved by the University Human Ethics Review Committee to ensure that it met ethical standards. Also, the approval for collecting data was obtained from the university where student participants were to be recruited. Finally, to protect the confidentiality of the data, the de-identified survey and interview data were stored on a password-protected computer file, located on a shared research drive, where they will remain for the required statutory time frame of 5 years.

#### **4.8. Pilot Study Results**

The quantitative and qualitative materials for Phases 1 and 2 respectively, were tested for evidence of their validity via a pilot study prior to the main data collection stages of this study. An important source of validity is the response processes that the respondents use to answer the questions (Arjoon et al., 2013). With respect to the measure of attitudes towards asynchronous e-learning, 15 Saudi female higher education students completed the E-Learning CSF Instrument and provided feedback on its clarity and the relevance and difficulty of items on the instrument. Similarly, a small sample of students ( $N = 2$ ) provided feedback on the line of questioning proposed for the qualitative phase of the study, to ensure the questions

were valid and could be easily comprehended and answered. Feedback from the participants indicated that the questions on the survey which measure asynchronous e-learning attitudes and the semi-structured interview questions were clear, relevant and did not pose any difficulty when responding. To further establish their validity, participant responses to the survey measure of asynchronous e-learning attitudes were pooled and subjected to basic statistical analysis, while the responses to the semi-structured interview questions were reviewed in detail.

#### 4.8.1. *Quantitative Findings*

Analysis of the responses of participants to the measure of asynchronous e-learning attitudes were investigated to determine the reliability of the scales and to assess whether they meet the assumption of normality. The 53-item measure of asynchronous e-learning attitudes was first pooled with respect to the scales identified by Selim (2007). The Instructor Characteristics scale included 13 items which assessed the characteristics of instructors, including the instructor's teaching style, attitude towards the technology and their control of the technology. Twenty-two items were used for the Students' Characteristics scale, including the student motivation to use e-learning, the students' technical competency, students' attitudes to the learning activities that are facilitated using e-learning, student interactive collaboration and the efficacy of e-learning course structure design and content from the learner's perspective. Thirteen items were used to measure the reliability, consistency, richness and effectiveness of learning technologies, and is labelled the Information Technology scale. Finally, 5 items were employed to measure University Support; these items measure student perceptions of the efficiency and effectiveness of the university's library systems, computer labs and technologies to support e-learning.

As shown in Table 4.2, and consistent with the findings of Selim (2007), each scale of the asynchronous e-learning attitudes measure was internally consistent, with Instructor Characteristic, Student Characteristics and Support being highly reliable, and the Technology scale showing a good level of reliability. Intercorrelations between the scales further showed the discriminant and convergent validity of the measure of asynchronous e-learning attitudes (Creswell, 2012). Student Characteristics and Instructor Characteristic were strongly and significantly correlated, and the Technology and Support scales were also highly correlated, reflecting the convergent validity of the measure. In contrast, Student and Instructor Characteristic and Technology and Support were not significantly correlated, indicating the divergent validity of the measure of asynchronous e-learning attitudes as these scales would be expected to show no relationship.

*Table 4.2. Intercorrelations and Reliabilities of the Four Scales of E-Learning CSF Instrument*

	IC	SC	T	S
Instructor Characteristic	<b>.92</b>			
Student Characteristics	.75 <sup>a</sup>	<b>.88</b>		
Technology	.12	.18	<b>.87</b>	
Support	.02	.10	.66 <sup>a</sup>	<b>.76</b>

*Note:*  $N = 15$ ; <sup>a</sup>  $p < .01$ ; alpha reliabilities are shown on the diagonal in bold type.

The pilot data was examined to assess the central tendency and dispersion of each scale, with the results presented in Table 4.3. The findings indicated a negative skewness and positive kurtosis on both the Student and Instructor Characteristic scales. Despite this result, a significance test of skewness and kurtosis ( $z = \text{Skewness}/\text{SE of Skewness}$  and  $Z = \text{Kurtosis}/\text{SE of Kurtosis}$ ) for small sample sizes showed that only the Student Characteristics scale was significantly skewed and

kurtotic based on the criteria,  $-1.96 < z > 1.96$ ,  $p < .001$  (Tabachnick & Fidell, 2013)..Nevertheless, the mean and median of the Student Characteristic scale were almost the same, indicating that the skewness and kurtosis were not affecting the distribution of scores. Moreover, the one sample t-test is a robust statistical procedure with small sample sizes (de Winter, 2013) and showed that Instructor and Student Characteristics were significantly positive and above the midpoint of the scale ( $3.50$ ,  $t(14) = 3.74$ ,  $p = .002$  and  $t(14) = 4.19$ ,  $p = .001$  respectively. In contrast, the mean score for Technology was at the midpoint of the scale, indicating neutral views about technology support. Finally, Support was below the midpoint, indicating that attitudes towards University support for e-technology were less than positive. Nevertheless, one-sample t-tests showed that the mean scores for Technology and Support were not significantly different from the midpoint of the scale.

*Table 4.3. Measures of central tendency of the Four Scales of the E-learning CSF Instrument*

	Min	Max	Mean	SD	Median	Skew	SE Skew	Kurtosis	SE Kurtosis
Instructor Characteristic	1.38	6.00	4.64	1.14	4.96	-1.93	.60	4.76	1.15
Student Characteristics	1.67	5.61	4.46	0.88	4.50	-2.33	.58	7.61	1.12
Technology	1.69	4.92	3.51	1.03	3.62	-0.33	.58	-0.97	1.12
Support	2.00	4.50	3.15	0.78	3.00	0.35	.58	-0.72	1.12

*Note:*  $N = 15$ ; SE = Standard Error.

Overall, it may be concluded that the four scales of the asynchronous e-learning attitudes measure generally met the assumption of normality, suggesting that the scales may be suitable for analysis via inferential statistics and regression analysis in the main quantitative study of this thesis. Each of the scales used to measure asynchronous e-learning attitudes demonstrated either a good or high level of reliability. Moreover, convergent validity of the scales was demonstrated via a

strong correlation between Instructor and Student Characteristics and between the Technology and Support scales. The scale items also showed face validity as they appeared to capture the main elements of e-learning environments to include the student, instructor, technology and external support for asynchronous e-learning. As such, the instrument and items from each scale function reflect the critical success factors of asynchronous e-learning (Selim, 2007). Moreover, the strong correlation between the Student and Instructor Characteristic scales and between the Technology and Support scales indicated two clusters of factors that reflect the human element of e-learning environments and the external mechanisms to support e-learning respectively.

#### 4.8.2. *Qualitative Findings*

The results from the qualitative pilot study sample ( $N = 2$ ) of female Saudi university students were analysed with respect to each research question.

- **Response to Research Question 1: To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of asynchronous e-learning?**

To operationalise this research question, the participants were asked: *Please comment on the quality of the material you work with in this learning environment.*

In response, both participants believed that the ICT information was beneficial to their learning outcomes because it allowed them to have more time to learn the materials. For example, Respondent 1 stated, "For me, I need much time, and I am very curious, so I need a long time, and I ask many questions, so the instructor will get bored with me, but by this method, I can have a long time and whenever I want to finish, I finish". Similarly, Respondent 2 stated, "Learning by this method developed me because I had the ability to re-listen again, to stop, pause, translate, re-listen again".

- **Response to Research Question 2: How does the technical performance of the ICT system predict learners' evaluation of asynchronous e-learning?**

Respondents were also asked to address this research question, via the interview question: *How do the technical requirements for asynchronous learning meet your learning objectives?*. Respondent 1 answered this question by speaking about the benefits of the blended learning approach over face-to-face classes, "Face-to-face, one is very limited, as the only time you have with your teacher is the class time, but this is magical; you can have unlimited time with your instructor and with your material, so you don't study only the book, you can search in more details in every subject you like". Nevertheless, there was some reported downside to the technical performance of the ICT system, as "some people get lost in the process of searching" (R1).

- **Response to Research Question 3: Why is asynchronous e-learning related to a positive impact on individual users' learning and learning outcomes?**

Importantly, both respondents reported that asynchronous e-learning had a positive impact on their exam results and learning. In response to the interview question: *How has asynchronous learning impacted on your performance in exams and tests?*, Respondent 1 stated, "it was a positive impact because my grades better in the subject that I can use computer". Similarly, Respondent 2 claimed that e-learning impacted "Positively. Much more" on her learning outcomes and exam results.

- **Response to Research Question 4: How do organisational factors (supportive instructors, learning community) predict learners' evaluation of asynchronous e-learning?**

The two respondents had differing views relating to this question. For example, in response to the interview question: *Describe how much interaction you have with the content and instructors in asynchronous blended e-learning,*



Respondent 1 had a positive view, stating, “I think it makes the interaction much better, because we can interact via email, and, to be honest, the instructor was available most of the time ...and that helped also the shy students”. In contrast, Respondent 2 shared, “I see a lot of my friends they don't like it because they say, “We cannot interact with the teacher. We cannot listen. We cannot concentrate if he is talking, talking, talking. I cannot concentrate with him.” Moreover, Respondent 2 responded to the interview question: *Describe the positive and negative aspects of asynchronous blended e-learning according to the learners' conceptions*, by claiming that a downside to asynchronous learning was “that you cannot contact the teacher directly”, and that asynchronous learning “will not be better than the face-to-face learning education, because of the interaction”.

Such differences in views about asynchronous e-learning were also elicited by participant responses to the interview question: *Please comment on the level of satisfaction (or dissatisfaction) you have with asynchronous learning*, which also provided data relevant to the research questions. Overall, Respondent 1 had very positive views about asynchronous learning, stating, “My experience in asynchronous learning method was very good, it makes my study very easier, and much easier and it helps me to translate, and to download the slides, and to understand difficult words and it helps me when the teacher was not available many times”. Respondent 2 also noted the benefits of asynchronous learning by stating, “I can say I kind of achieved my goals by using this asynchronous learning” and “The benefits that you can attend it anytime, anywhere. You can see the points of view from so many teachers, so many professors, so many doctors. So, it's a really good source of information.” Nevertheless, she also noted some of the disadvantages by stating, “I think the drawbacks that some teachers are from different nationalities, they have different aspects, different points of view, and some of

their teaching is different. And some of them say different information. So sometimes I don't know what's right and what's wrong.”

Altogether, the qualitative pilot study showed that the full range of interview questions generated participant responses that spoke to the research questions of this study. Participants clearly understood the interview questions and their responses provided rich data about their perceptions of asynchronous e-learning. In terms of the research questions of this study, the interview questions and responses appeared to reflect participants' thoughts about the quality and effectiveness of ICT information, the technical performance of the ICT system, the impact of e-learning on individual users' learning and how instructors and organisational factors facilitate e-learning environments. Each of these factors was shown to relate to the focus of this thesis on student evaluation of asynchronous e-learning.

#### **4.9. Summary**

This chapter provided details of the methods that were employed to address the research questions of this study. The sample of this study was a group of Saudi female undergraduate students who were taking English Language courses via asynchronous blended learning. Participants responded to a validated scale in Phase 1 of the study to measure their perceptions and evaluations associated with asynchronous e-learning. In Phase 2, participants were recruited for semi-structured interviews to gain an in-depth knowledge of their perceptions and evaluations associated with e-learning. Analysis of the data from Phase 1 entailed inferential statistics and phenomenological analysis was employed to analyse data from Phase 2 of the study. Finally, this chapter reported the results from a pilot study of the materials and procedures employed to gather data from Phases 1 and 2 of this

research. These results supported the expectation that the survey and semi-structured interview formats provide a valid and reliable set of materials and methods to address the research questions and test the hypotheses of this study. In the following chapter, the results and findings from the quantitative research of this study (Phase 1) are reported in full.

## **Chapter 5: Quantitative Results**

### **5.1. Chapter Overview**

The analyses of quantitative results relevant to the aims of this thesis are reported over the following sections. The first two sections, (5.2) and (5.3), provide details relating to the data screening procedures employed and the methods to validate the asynchronous e-learning attitude scales through factor analysis. The next section (5.4) presents descriptive statistics for the asynchronous e-learning attitude scales, and results from testing the normality assumption and descriptive statistics for the sample of respondents. The final sections (5.5, 5.6, and 5.7) present the results of significance testing on the strength of attitudes towards asynchronous e-learning, as indicated by the mean scores on each of the scales of the asynchronous e-learning attitudes measure, and regression results to test the research questions of this study.

### **5.2. Missing Data and Exclusion Criteria**

The quantitative data was prepared for analysis by first examining each case for a range of potential participant response biases, such as an acquiescence bias, extreme responding or insufficient effort. Insufficient effort is defined as non-random repeated endorsement of the same response option on a multi-item scale (Huang, Curran, Keeney, Poposki, & DeShon, 2012). Three cases were identified where the answers reflected insufficient effort: two participants responded with almost all 1s and one participant responded with almost all 5s. A further case was deleted due to many missing values. In each of these cases, the participant's data was removed from further analysis, leaving a final sample of 103 respondents.

### 5.3. Scale Validation, Computation and Reliability

Based on the recommendations of Cignac (2009), the asynchronous e-learning attitudes survey data was subjected to Partial Confirmatory Factor Analysis (PCFA) with SPSS to establish the validity of the measure and scales. Factor analysis is generally recommended when there are between five and 10 cases per item (Munfrom, Shaw & Ke, 2005); however, the data set in this study was below this criterion, at 1.94 cases per item (53 items and 103 participants). To overcome this issue, each of the four scales of the E-Learning CSF Instrument was subjected to separate partial confirmatory factor analysis, with the alpha significance adjusted by the Bonferroni correction to  $p < .01$ , to account for the higher risk of family-wise error with multiple analyses on the same data set (Ranganathan, Pramesh & Buyse, 2016).

The estimation of each model, with respect to each scale, was conducted by a maximum likelihood estimation as the most robust factor extraction technique in PCFA (Cignac, 2009). The analysis also employed a direct oblimin rotation in cases where the PCFA of each scale yielded more than one factor, as multiple factors would be expected to be moderately correlated (Reio, & Shuck, 2014). As recommended by Tabachnick and Fidel (2013), factor loadings of .50 and above were considered valid; thus, scores below .50 were suppressed in the factor analysis output. The factorability of the data was confirmed by a high Kaiser-Meyer-Olkin (KMO) statistic and the acceptability of each model solution was evaluated via recommended goodness-of-fit indices for PCFA (Bentler, 1990), including the Normed Fit Index (NFI), the Tucker–Lewis Index (TLI), the Comparative Fit Index (CFI) and the root mean square error of approximation (RMSEA). Whereas NFI, TLI and CFI values approximating .95 or larger indicate an acceptable model fit, RMSEA

values of .08 to .06 or less are indicative of a well-fitting model (Hu & Bentler, 1999).

Analysis of the 13-item Instructor Characteristic scale of the E-Learning CSF Instrument supported a single factor structure (KMO = .88;  $\chi^2 = 619.27$ ,  $p < .001$ ), with the first component derived from factor analysis explaining 49.4% of the variance in responses (eigen value = 6.42). The second component from factor analysis had an eigen value of 1.06, but only explained an additional 8.2% of the variance in responses and none of the items had a factor loading score above .50. Goodness-of-fit indices for the factor solution were within acceptable limits, with NFI = .88, TLI = .95, CFI = .97 and RMSEA = .06. As can be seen in Table 5.1 below, the 13 items clearly loaded onto one factor, with factor loading scores above .60. The items reflected the participants' perceptions about instructors' attitudes towards the students in an e-learning environment and captured instructors' attitudes towards the technology, teaching style and control of the technology (Selim, 2017).

*Table 5.1. Factor loadings for the 13-item Instructor Characteristic Scale of E-Learning CSF Instrument*

Item	Factor 1
The instructor encourages and motivates me to use e-learning.	.83
We are encouraged to participate in class.	.77
The instructor is enthusiastic about teaching the class.	.74
We are invited to ask questions/receive answers.	.72
The instructor has a genuine interest in students.	.72
The instructor's style of presentation holds my interest.	.72
The instructor handles the e-learning units effectively.	.71
The instructor explains how to use the e-learning components.	.69
The instructor is active in teaching me the course subjects via e-learning.	.67
Students feel welcomed to seek advice/help.	.66
The instructor encourages student interaction.	.64
The instructor is friendly towards individual students.	.64
I feel the instructor is keen that we use the e-learning based units.	.60

Factor analysis was then conducted on the 22-item Student Characteristics scale of the E-learning CSF Instrument, with the analysis supporting the factorability of the scale ( $KMO = .68$ ;  $\chi^2 = 735.00$ ,  $p < .001$ ). Although there were six eigen values above 1.0, a scree plot suggested a two-factor solution. Whereas Factor 1 had an eigen value of 5.25 and explained 23.9% of the variance in responses, Factor 2 had an eigen value of 2.5 and explained 10.5% of the variance in responses. A direct oblimin rotation of the two factors was then conducted as there was an expectation that the variables would be moderately correlated (Reio, & Shuck, 2014). The factor loading scores of the two-factor rotated solution are displayed in Table 5.2 and the higher factor loadings indicate that Factor 1 had a focus on Student Attitudes towards E-learning per se. In contrast, Factor 2 reflected Student Attitudes towards using Technology more generally and students' general learning styles. As a consequence of this analysis and the fact that the component correlation matrix indicated a weak to moderate relationship between the two factors (.29), two scales of the Student Characteristics scale of the E-learning CSF Instrument were constructed with respect to the two-factor solution. To ensure a clear separation of the factors, only items with factor loadings above .50 were retained for the two scales. Thus, Factor 1: Student Attitudes towards E-learning included 8 items, while Factor 2: Student Attitudes towards Technology use in general included 6 items. Goodness-of-fit indices for the factor solution were within acceptable limits, with  $NFI = .85$ ,  $TLI = .89$ ,  $CFI = .94$  and  $RMSEA = .08$ .

The two different factors derived from PCFA reflected two distinct aspects of student attitudes towards asynchronous e-learning (Selim 2007). The first factor: Student attitudes towards e-learning, included participants' motivation to use e-learning and the effectiveness of the e-learning course content, structure and design.

In contrast, the second factor: Student attitudes towards technology, measured participants' technical competency.

*Table 5.2. Factor loadings for the 22-item Student Characteristics Scale of E-Learning CSF Instrument*

Item	Factor 1	Factor 2
The e-learning encourages me to participate more actively in the discussion than the traditional methods.	.75	
It was easy to understand the structure of the e-learning components.	.72	
I found the course content to be sufficient and related to the subject.	.69	
I found the instructions on using the e-learning components to be sufficiently clear.	.63	
It was easy to navigate through the Blackboard/course web.	.60	
The e-learning encourages me to search for more facts than the traditional methods.	.59	
The instructor participated actively in the discussion.	.56	
The e-learning components were available all the time.	.55	
I learn best by absorption (sit still and absorb).	.48	
I perceive the design of the e-learning components to be good.	.45	
The students initiated most of the discussion.	.36	
I do read as well as participate in the discussion group.	.34	
The instructor initiated most of the discussion.		
I only read messages in the discussion group.		
I was comfortable with using the PC and software applications before I took up the e-learning based courses.		.70
I learn better by construction than absorption.		.68
I learn best by construction (by participation and contribution).		.67
I use personal computers for work and play.		.63
I enjoy using personal computers.		.63
My previous experience in using the PC and software applications helped me in the e-learning based courses.		.53
The course materials were placed online in a timely manner.		.46
I am not intimidated by using the e-learning based courses.		.32

PCFA of the 13-item Technical Asynchronous E-learning Attitudes scale also supported the factorability of the scale ( $KMO = .76$ ;  $\chi^2 = 345.63$ ,  $p < .001$ ) and similarly showed a two-factor solution. Although there were four eigen values above



1.0, a scree plot suggested a two-factor solution. Whereas Factor 1 had an eigen value of 4.34 and explained 33.4% of the variance in responses, Factor 2 had an eigen value of 1.5 and explained 11.4% of the variance in responses. A direct oblimin rotation of the two factors was then conducted as there was an expectation that the variables would be moderately correlated (Reio, & Shuck, 2014). The factor loading scores of the two-factor rotated solution are displayed in Table 5.3 and the higher factor loadings indicate that Factor 1 reflected evaluations of the technical infrastructure, whereas Factor 2 was focussed on the technical aspects of the e-learning environment. Goodness-of-fit indices for the factor solution were within acceptable limits, with NFI = .78, TLI = .88, CFI = .94 and RMSEA = .06. Based on this analysis and the fact that the component correlation matrix indicated a weak to moderate relationship between the two factors ( $r = .35$ ), two scales of the Technical component of Asynchronous E-learning Attitudes were constructed with respect to the two-factor solution. To ensure a clear separation of the factors, only items with factor loadings above .50 were retained for the two scales. Thus, Factor 1: Attitudes towards the Technical Infrastructure included 6 items and Factor 2: Attitudes towards the Technical E-learning Environment included 5 items.

Altogether, the two-factor solution reflected two different aspects of Technology Attitudes toward Asynchronous E-learning (Selim, 2007). The Technical Infrastructure factor was comprised of items that capture the effectiveness of the IT in terms of consistency of computer access, computer network reliability and student information system efficiency. The second factor, attitudes toward the Technical aspects of the e-learning environment, captured the ease of use of course websites, user interface efficiency, student–student communication reliability and student–instructor communication.

*Table 5.3. Factor Loadings for the 13-item Technical Support Scale of E-Learning CSF Instrument*

Item	Factor 1	Factor 2
Easy on-campus access to the Internet.	.75	
Browsing speed was satisfactory.	.74	
Did not experience problems while browsing.	.69	
I can use any PC at the university using the same account and password.	.62	
I can use the computer labs for practicing.	.58	
I can rely on the computer network.	.54	
Overall the website was easy to use.	.47	
Information was well-structured/presented.		.82
I found the screen design pleasant.		.67
I could easily contact the instructor.		.59
I could interact with classmates through the web.		.55
Overall the Information Technology infrastructure is efficient.		.52
I can register courses online using Banner.		.42

A final PCFA was conducted on the 5-item Support scale of the asynchronous e-learning attitudes measure, with the initial results indicating the factorability of the scale ( $KMO = .72$ ;  $\chi^2 = 108.54$ ,  $p < .001$ ). The results indicated a one-factor solution, confirming the unidimensionality of the General Support scale. The factor had an eigen value of 2.50 and explained 50% of the variance in responses. Goodness-of-fit indices for the factor solution were within acceptable limits, with  $NFI = .98$ ,  $TLI = .93$ ,  $CFI = .99$ , and  $RMSEA = .08$ . As can be seen from Table 5.4 below, each item showed high factor loadings on the one-factor solution. The items of the Support scale captured the effectiveness and efficiency of the university technical support, library services and computer labs reliability.

*Table 5.4. Factor Loadings for the 5-item General Support Scale of E-Learning CSF Instrument*

Item	Factor 1
There are enough computers to use and practice.	.75
I can get technical support from technicians.	.71
I can print my assignments and materials easily.	.70
I think that the IMSIU e-learning support is good.	.69
I can access the central library website and search for materials.	.68

Based on the findings from the factor analysis results, means were calculated to represent 6 scales of asynchronous e-learning attitudes: Instructor attitudes (I, 13 items), Student-e-learning attitudes (S-E, 8 items), Student-computer attitudes (S-C, 6 items), Technical-Infrastructure attitudes (T-I, 6 items), Technical-Learning platform attitudes (T-L, 5 items), and Support attitudes (5 items). Cronbach alpha reliabilities and intercorrelations between the 6 scales were calculated and are presented in Table 5.5 below. The analysis showed five of the six scales demonstrated a good level of reliability, whereas attitudes to the Technical learning platform showed an acceptable level of reliability (Cronbach & Shavelson, 2004). At the same time, the reliability of the whole scale was high with an alpha coefficient of .91. In view of these results, the asynchronous e-learning attitude scales were considered to be internally consistent and adequately constructed for subsequent inferential statistical analysis.

*Table 5.5. Intercorrelations and Alpha Reliabilities of Asynchronous E-learning Attitude Scales*

Scale	Factor	I	S-E	S-C	T-I	T-L	S
1	1. Instructor	<b>.91</b>					
2	1. Student (e-learning)	.68 <sup>a</sup>	<b>.80</b>				
	2. Student (computers)	.50 <sup>a</sup>	.40 <sup>a</sup>	<b>.75</b>			
3	1. Technical (infrastructure)	-.06	.03	.07	<b>.76</b>		
	2. Technical (learning platform)	.36 <sup>a</sup>	.43 <sup>a</sup>	.40 <sup>a</sup>	.44 <sup>a</sup>	<b>.68</b>	
4	1. Support	.01	.19	.06	.61 <sup>a</sup>	.37 <sup>a</sup>	<b>.75</b>

*Note:* Alpha reliabilities are shown on the diagonal in bold type; <sup>a</sup> =  $p < .01$ , I = Instructor, S-E = Student (e-learning), S-C = Student (computers), T-I = Technical (Infrastructure), T-L = Technical (Learning platform), S = Support.

Table 5.5 also shows the expected intercorrelations between the Asynchronous E-Learning Attitude scales. Consistent with the pilot study results of this thesis, Student Characteristics and Instructor Characteristic were strongly and significantly correlated, and the Technology and Support scales were also highly correlated, thereby reflecting the convergent validity of the measure. As such, the strong correlation between the Student and Instructor Characteristic scales and between the Technology and Support scales indicated two clusters of factors that reflected the human element of e-learning environments and external mechanisms to support e-learning respectively.

The findings from the intercorrelation analysis are also illustrated in Figure 5.1 and show a positive and significant relationship between Technical Attitudes towards Learning Platform and Student Characteristics and Instructor Characteristic, reflecting the close relationship between how e-learning environments facilitate student and instructor interaction. As expected, the relationship between the Infrastructure and Support scales were not significantly correlated with Student and

Instructor Characteristic, indicating that these elements act relatively independently of each other. This also provides evidence of the divergent validity of the measure of asynchronous e-learning attitudes. Overall, factor analysis and reliability and correlations provided good evidence of the validity and reliability of the asynchronous e-learning attitude scales and supported their use in subsequent analysis.

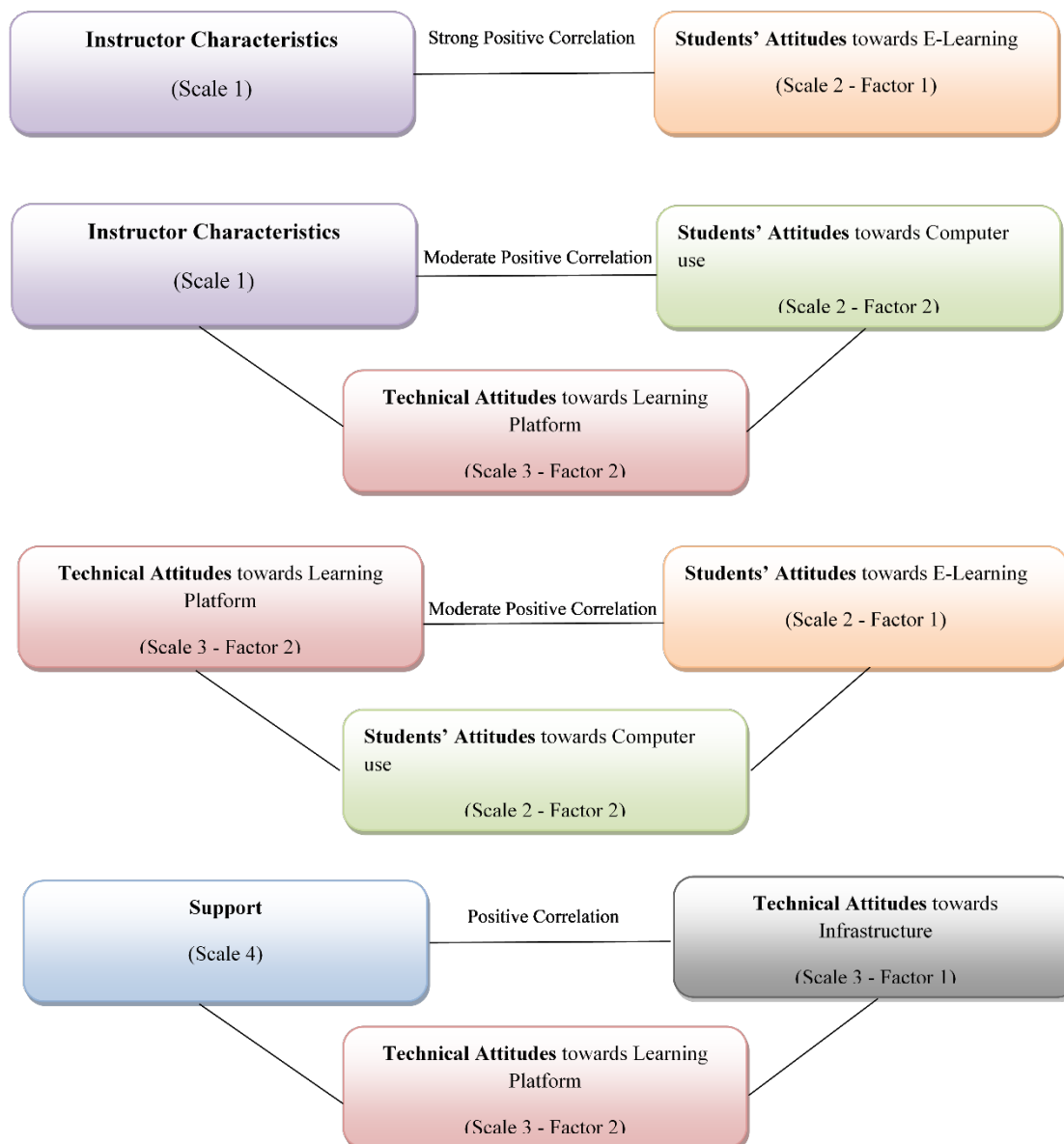


Figure 5.1. Intercorrelations between the E-Learning CSF Instrument Scales.

#### 5.4. Descriptive Statistics and Assumption Testing

Descriptive statistics of the asynchronous e-learning attitudes scale for the whole sample are calculated and shown in Table 5.6. The data showed that the mean scores of Instructor, Student-e-learning and Student-computers were well above the midpoint of 3.5 of the 6-point scale, indicating positive attitudes towards the Instructor and positive student attitudes towards e-learning and computer use in general. In contrast, attitudes towards the Technical aspects of the infrastructure and Support from the university were below the midpoint of the scale, indicative of negative attitudes towards those aspects of the asynchronous e-learning programme.

*Table 5.6. Descriptive Statistics for the Asynchronous E-Learning CSF Instrument Scales*

	M	SD	Skew	S.E.	Kurtosis	S.E.
Instructor	4.56	1.00	-1.05	.24	1.77	.47
Student-e-learning	4.37	0.97	-1.09	.24	1.53	.47
Student-computers	4.55	1.03	-1.16	.24	1.41	.48
Technical-infrastructure	3.14	1.19	-0.04	.24	-0.75	.48
Technical-learning platform	4.05	1.01	-0.71	.24	0.44	.47
Support	3.05	1.20	0.10	.24	-0.89	.47

*Note:* *M* = Mean, *SD* = Standard Deviation.

Each scale was then tested to ensure it was suitable for the application of inferential statistics. An important assumption to meet the requirement for inferential statistics is that the scores on each scale are normally distributed. An inspection of the distribution of scores for each scale, via separate histogram plots (shown in Appendix D), indicated that the central tendency and dispersion of scores on each scale generally reflected the normal distribution; however, the Instructor, Student-e-learning and Student-computer scales appeared to be negatively skewed. Further analysis was then conducted by inspecting the skewness and kurtosis statistics, as shown in Table 5.6. These statistics were calculated to evaluate the level of

symmetry in the distribution of scores and the amount of values in the two tails of the distribution of scores respectively (Fink, 2009). As advised by Tabachnick and Fidell (2013), the normality assumption was assessed by a calculation of the standardised statistics for skewness and kurtosis. Skewness and kurtosis scores that fell outside the criterion  $-3.29 < z < 3.29$ ,  $p < .001$  were considered significantly non-normal ( $p < .001$ ). Based on this criterion, the Instructor, Student-e-learning and Student-computer scales were identified as significantly skewed, with the Instructor variable also demonstrating significant kurtosis.

The SPSS procedure Boxplot analysis was then conducted to show the shape of the distribution, its central value, its variability and to identify outlier scores that do not fit within the distribution of scores. With this procedure, four outliers were identified on each of the Instructor, Student-e-learning and Student-computer scales. In each case, the outlier was transformed to the next available value, as recommended by Tabachnick and Fidell (2013), which resolved the issues of significant skewness and kurtosis on these scales.

### **5.5. Strength of Attitudes on the E-Learning CSF Instrument Scales**

The strength of participants' attitudes on each of the asynchronous e-learning scales was investigated to determine if the mean score on each scale was significantly different from a neutral attitude, which was hypothetically the mid-point of the scale (between agree and disagree). This was achieved by conducting one-sample t-tests (McDonald, 2014) to test if the mean strength of attitudes on the 6 asynchronous e-learning attitudes scales was significantly different from the midpoint of the 6-point scale (3.5). The findings showed that Instructor Characteristics were rated positively and significantly above the midpoint,  $t(102) = 12.83$ ,  $p < .001$ . Similarly, Student-e-learning and Student-computer attitudes were

rated positively and significantly above the midpoint,  $t(100) = 10.74, p < .001$  and  $t(98) = 11.14, p < .001$  respectively. Moreover, attitudes towards the Technical learning platform were also significantly positive,  $t(101) = 5.47, p < .001$ . In contrast, attitudes towards the Technical infrastructure were significantly negative,  $t(98) = 2.99, p = .004$ . In the same way, attitudes towards University support were significantly negative,  $t(101) = 3.79, p < .001$ . All in all, the human aspects of the e-learning environment were rated positively, whereas the Technical and University Support aspects of the e-learning environment were rated negatively.

## **5.6. Regression Analysis**

The data generated from the quantitative phase of this study was employed to test the research questions via multiple regression analysis, given that the focus of each question was on how each attitude towards asynchronous e-learning predicted learner evaluations. Each of the asynchronous e-learning attitude scales was assigned as an independent variable in the regression analysis, to test how much each factor predicted evaluation of asynchronous e-learning, via an assessment of regression beta-weights. As such, regression analysis was employed to test the following research questions:

**RQ1.** To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ2.** How does the technical performance of the ICT system predict learners' evaluation of effectiveness of asynchronous e-learning?

**RQ4.** How do organisational factors (supportive instructors, learning community) predict learners' evaluation of effectiveness of asynchronous e-learning?



The ordinary least squares (OLS) linear regression model was used to determine the predictive capacity of Instructor Characteristic, Students' attitudes towards E-learning and Computers and Students' attitudes towards the Technical Infrastructure and the Learning Platform on learners' evaluation of asynchronous e-learning (Support). This method is the most common and robust approach to testing a linear relationship between independent and dependent variables (Williams, Grajales & Kurkiewicz, 2013). To meet the assumptions of multiple linear regression, it is necessary to check the data for issues associated with multicollinearity, normality and the presence of outliers (Hair, 2010). As detailed in Table 5.5, none of the intercorrelations between the independent variables were above the cut-off value of .80, which is indicative of multicollinearity (Berry & Feldman, 1985). Moreover, the assumption of normality was shown in previous analysis to be met and there were no outliers among the independent variables.

Overall, the results of the regression analysis showed that Instructor Characteristic, Student attitudes towards E-learning and Computers and Students attitudes towards the Technical Infrastructure and the Learning Platform explained 41.8% ( $R^2 = .418$ ) of the variance in Support  $F(5, 93) = 12.96, p < .001$ . The impact of each independent variable is shown in Table 5.7, indicating that Students' attitudes towards E-learning ( $B = .31, SE = .15, t[98] = 2.15, p < .001$ ) and Students' attitudes towards the Technical Infrastructure ( $B = .61, SE = .09, t[98] = 6.45, p < .001$ ) were significant unique predictors of learner evaluation of e-learning (Support). As such, regression analysis provided support for RQ1, where the quality and effectiveness of ICT information, in terms of positive learning outcomes predicted learners' positive evaluation of asynchronous e-learning. In other words, significance testing at  $p < .05$  showed students with more positive e-learning attitudes and

attitudes toward the technical infrastructure showed more positive evaluations of asynchronous e-learning. In contrast, significance testing showed attitudes about the instructor characteristics, using computers and the technical learning platform were unrelated to student evaluations of asynchronous e-learning ( $ps > .05$ ). As such, regression analysis provided support for RQ2, where the technical performance of the ICT system predicted learners' evaluation of the effectiveness of asynchronous e-learning.

*Table 5.7. Significance Test of the Regression Coefficients*

	B	SE	Standardised B	<i>t</i>	<i>p</i>
(Intercept)	.24	.68		0.35	.72
Instructor	-.15	.14	-.11	1.02	.31
Student-e-learning	.31	.15	.23	2.15	.03
Student-computers	.03	.12	.02	0.22	.82
Technical-infrastructure	.61	.09	.61	6.45	.00
Technical-learning platform	.01	.13	.01	0.05	.96

*Note:* Dependent Variable = E-learning Evaluation (Support).

## 5.7. Summary of Findings

The analysis of results reported in this chapter represents the first phase of the sequential mixed-method design employed in this thesis to understand the attitudes of female university students in Saudi Arabia towards asynchronous e-learning of English. Factor analysis of the 53-item asynchronous e-learning attitude scale generated six reliable and valid scales that reflected the main elements of the e-learning environment: Instructor Characteristic, Student-e-learning attitudes, Student-computer attitudes, Technical-Infrastructure attitudes, Technical-Learning platform attitudes and University Support. Intercorrelation findings showed a positive and significant relationship between Instructor Characteristic and Student

attitudes towards e-learning. Attitudes toward University support was also positively correlated with attitudes towards the Technical aspects of the infrastructure.

The findings also showed that attitudes towards Instructor Characteristic and Students' attitudes towards the e-learning environment were rated positively, whereas the Technical and University support aspects of the e-learning environment were rated negatively. Finally, regression analysis indicated that Student attitudes towards E-learning and Student attitudes towards the Technical Infrastructure were significant unique predictors of learner evaluation of e-learning (Support). As such, regression analysis provided support for **RQ1**, where the quality and effectiveness of ICT information, in terms of positive learning outcomes predicted learners' evaluation of the effectiveness of asynchronous e-learning. Moreover, regression analysis provided support for **RQ2**, where the technical performance of the ICT system predicted learners' evaluation of the effectiveness of asynchronous e-learning. In contrast, regression analysis did not support **RQ4**, as the organisational factor of supportive instructors did not predict learners' evaluation of the effectiveness of asynchronous e-learning.

Despite these findings, there are several methodological limitations to the study design and execution that impact on the generalisability of the findings. Although the scientific method adopted in this quantitative study assumes that numerical measurement of attitudes accurately reflects objective reality (Bryman, 2012), the study was limited by the number of participants to the E-Learning CSF Instrument, especially as the respondents to the survey were a relatively homogenous group of Saudi women completing undergraduate studies in English at the same university. Moreover, factor analysis of the measure of asynchronous e-learning attitudes did not provide a clear confirmation of the distinct attitudes shown in

previous research by Selim (2007). As such, any inferences made from the current findings about the effectiveness of asynchronous e-learning among other groups of learners or those students in different subject areas should be treated with relative caution.

A further limitation of the quantitative findings is that of the correlational nature of the research design. Whereas regression analysis assumes a predictive relationship between the independent variables and outcome variable, it does not produce information about definitive cause-effect relationships between using asynchronous e-learning and learner evaluation of this teaching format. Nevertheless, the correlational method provided several practical and pragmatic benefits in this study, including the capacity to investigate simultaneously, a range of concepts related to evaluation of asynchronous e-learning. As shown by the good reliabilities of the scales of the E-Learning CSF Instrument, the instrument format provided a relatively useful and efficient means of data collection. The next chapter provides the results from the qualitative analysis of semi-structured interviews with a group of female Saudi students on their attitudes towards e-learning.

## **Chapter 6: Qualitative Results**

### **6.1. Chapter Overview**

The analyses of qualitative results relevant to the aims and research questions of this thesis are reported over the following sections. The first section (6.2) provides details relating to the sample of participants who undertook semi-structured interviews, specifically on their perceptions of asynchronous e-learning. The next section (6.3) describes the methods that were employed to analyse and code data from the interviews, consistent with the Interpretive Phenomenological Analysis (IPA) methodology of data analysis and with respect to the research questions of this study. The findings from this analysis are presented over the following sections, (6.4) to (6.13), in relation to the main themes and subthemes that were generated by the data coding process. Eight main themes emerged from the coding of the interview data on the perceptions of asynchronous e-learning, mainly Barriers to Use, Benefits, Learner Outcomes, Organisational Support, Recommendations, Resources, Social Factors and Synchronous Learning. Thus, the main sections of this chapter provide an in-depth presentation of the findings under each main theme and subtheme, with reference to the respondent's own thoughts and words about asynchronous e-learning.

### **6.2. Participants**

Saudi female undergraduate students who were taking English Language courses via asynchronous blended learning were purposively recruited (Patton, 2002) as participants in this qualitative study for their perceptions of asynchronous e-learning. Participants were asked to engage in a semi-structured interview. Sampling was carried out until the data generated from the interviews reached the saturation

point, where collection of more data beyond a certain sample size would not provide any new information or would have little or no impact on the quality and quantity of data already collected (Guest, Bunce & Johnson, 2006). To determine the saturation point, each interview was reviewed in succession with regards to the data that was generated to address the main research question and expectations. As a result, a total of 15 undergraduate female students were interviewed for this study. To protect the identity of the participants, each transcript was assigned a code such that participants were denoted as P1 to P15. Each interviewee answered, in her own words, a series of questions to gather data on her perceptions of asynchronous e-learning. The length of time for each interview was between 15 to 30 minutes. Each interview was recorded and participant responses to each question were transcribed into Microsoft Word format and then transferred to the data analysis package, NVivo 11, for qualitative analysis and coding (QSR International, 2017).

### **6.3. Text Analysis to Derive Themes and Subthemes**

Prior to commencing the analysis, a NVivo word cloud was generated for a visualization of the main words used by participants to describe their perceptions of asynchronous e-learning. As shown in Figure 6.1, and consistent with the focus of the interviews, the word cloud procedure showed the main response words included terms like “learning”, “think”, “teacher”, “asynchronous”, “experience” and “university”.



Figure 6.1. Results of word frequency analysis via NVivo word cloud procedure

The first formal step in analysis was to read participant transcripts line by line and identify and highlight meaningful text and emerging codes. Using content analysis to identify patterns of meaning associated with asynchronous e-learning (Kondracki, Wellman, & Amundson, 2002), ‘nodes’ or codes were created to represent and categorise the main ideas expressed in different participant responses to each interview question (Bazeley & Jackson, 2013), with a sample screenshot of the application of nodes to text, as shown in Appendix E. The data was explored for these codes or for other relevant text in the data across all the interviews (Lewins & Silver, 2014). Once the initial coding of all transcripts was completed, the component elements of each code were considered for consistency or overlap with the other codes (Braun & Clarke, 2006). By this process, the codes were further defined, described and linked together into groups.

The codes that were generated from this process were then compared against the research questions to ensure that the codes reflected the main concepts, so that only the codes which significantly contributed towards the research questions

were pursued (Clarke & Braun, 2017). These included codes that reflected thoughts about asynchronous e-learning as it relates to ICT information and technology support, learner outcomes and benefits, satisfaction, technical performance and organisational factors. Additional codes that were relevant to the research questions also emerged from the analysis, specifically barriers to asynchronous e-learning use, resources, attitudes towards synchronous learning, social factors related to asynchronous e-learning and recommendations for improving asynchronous e-learning. These codes were analysed further and developed into a hierarchy of overarching themes and subthemes, to link the data together and to meaningfully relate back to the research questions. The themes were arranged according to the semantic content of the codes, so as to represent general perceptions of asynchronous e-learning with a range of categories or subthemes relating to the themes. Whereas table 6.1 shows the full list of themes and subthemes, each represented by sample quotes, Figure 6.2 shows an NVivo flowchart representing the relationship between themes and subthemes.

Ultimately, eight main themes emerged from the coding of the interview data on the perceptions of asynchronous e-learning, including *Barriers to Use*, which represents factors that make it difficult to use asynchronous e-learning. The theme *Benefits* represents positive outcomes from asynchronous e-learning, whereas the theme *Learner Outcomes* reflects what participants gained from asynchronous learning in terms of achieving their goals. *Organisational Support* was also derived from the thematic analysis and reflects perceptions about the organisation and instructors, whereas the theme *Technical Resources* reflected perceptions about the quality of learning material and information and technical issues with asynchronous learning. The theme of *Recommendations* considered perceptions about how to



improve asynchronous learning and the theme *Social Factors* was about social influence to use asynchronous learning. Finally, the theme *Asynchronous Learning* reflects perceptions about alternative teaching methods. The following sections provide an in-depth presentation of the findings, with respect to each main theme and subthemes, by reference to the respondent's own words.

*Table 6.1. Sample participant comments relating to themes and subthemes of asynchronous learning derived from analysis of interview content*

Themes and subthemes	Sample Quote
<b>Benefits (35)</b>	It helped a lot, because it gives me many sources, it gives me the chance to even ask people on the web.
Access (2)	The most positive thing, maybe ... as I said, I can access it at anytime.
Learning Advantages (29)	It allows me to read books online, watch learning videos, learn what I need to learn.
Resource Advantages (1)	We don't really need any hard copies of our homework, of anything.
Time advantages (3)	It can save my time, unlike if I search or do some research without using this kind of technology.
<b>Learner Outcomes (139)</b>	I think I am better you know. I have more information and I think more, I'm not in a little box.
Achieve Goals (4)	You use technology more to achieve your learning goals.
English skills (14)	Helps students who don't have any previous experience in English to learn English quickly and easily.
Evaluation (44)	In some subjects some materials are good and really helpful in terms of language learning, but some are not helpful.
Negative attitudes (14)	Sometimes, the material itself is broad or not helpful so students get confused and distracted looking for the information they need.
Positive Attitudes (14)	I just, I love it actually. I'm learning now, another language in this method.
Rating (16)	I'm 100% with the e-learning.
Exams (10)	It helped a lot.
Independence (23)	I have learned how to learn by myself, so I am so totally satisfied.
<b>Organisational Support (44)</b>	No support. Even now I'm taking CALL, but we don't have labs, we can't go online.
Instructor (26)	We have some teachers who won't use any kind of materials, but other teachers will use it only.
University Support (18)	I think the university lacks in how they present the information.
<b>Technical Resources (21)</b>	What else is positive about this? Like the information is available online. I have other resources.
Quality of Material (14)	Sometimes the sources are not organised enough, or you can see much information mixed together.

Themes and subthemes	Sample Quote
Technical Issues (7)	Sometimes when I am learning the website, maybe just the Internet will shut down.
<b>Social Factors (9)</b>	It also pulled me out of my comfort zone, helped me to interact with my classmates.
Saudi Culture (3)	Sometimes, they give us some topics that is not allowed in Saudi Arabia.
Social Interaction (6)	I interact a lot using websites and WhatsApp and every technical device that I have, through emails.
<b>Asynchronous Learning (18)</b>	It's effective, I think it's better than face-to-face learning or the old traditional way.
Face-to-Face (18)	In some subjects, you need to face the teacher and to have that traditional method of teaching.
<b>Barriers to use (12)</b>	You do not get the chance to access to the internet all the time.
Dependability (1)	I can't depend on it, completely.
Distracting (3)	Sometimes, I get distracted by other websites, like social media ones and irrelevant YouTube videos.
Drawbacks (7)	Sometimes the sources are not organised enough, or you can see much information mixed together.
Mood Effects (1)	Sometimes you are not maybe in the mood to study.
<b>Recommendations (17)</b>	The foundation year of English learning need to be more supported technically, to help students who don't have any previous experience in English.

Notes: Themes are shown in bold text; total number of comments relating to each theme and subtheme are shown in brackets.

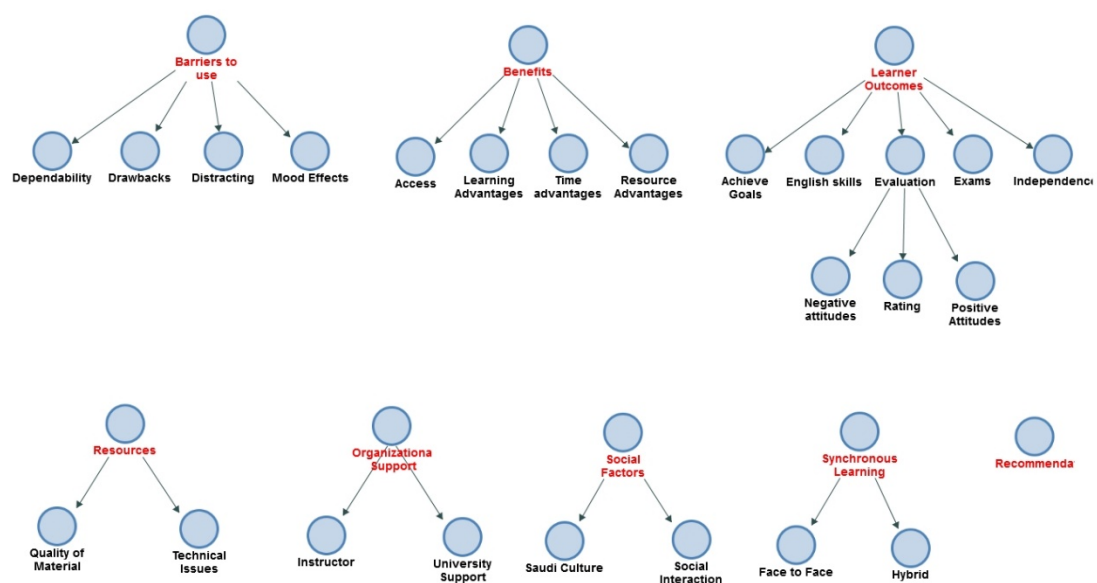


Figure 6.2. NVivo flowchart showing the relationship between themes (in red text) and subthemes

#### **6.4. Theme: Benefits of Asynchronous E-Learning**

The theme of *benefits from asynchronous e-learning* was reflected in access benefits, as well as benefits relating to learning, resources and time advantages. One participant (P3) identified access as a particular advantage to asynchronous e-learning, stating that “*the most positive thing, maybe ... as I said, I can access it at any time*” and “*if I, for example, skip lecture, and I took the content from the e-learning*”. Time advantages were also mentioned by a few participants as a benefit of asynchronous e-learning; for example, “*It can save my time, unlike if I search or do some research without using this kind of technology*” (P5). A further interviewee stated that e-learning saves resources, “*Nowadays, we don't really need any hard copies of our homework, of anything*” (P8).

In terms of benefits, most of the comments by participants related to the subtheme of learning advantages of the asynchronous teaching methods. A sample of these comments are shown in Table 6.2 below and reflect a range of learning advantages from asynchronous e-learning. Respondents noted a range of learning advantages of asynchronous e-learning of English, including improving their ability to learn vocabulary, their communication skills like speaking and accent, their reading and making use of resources such as online dictionaries. In a more general sense, participants also reported the learning advantage of being able to access many different resources through asynchronous e-learning. Moreover, greater access to teachers and instructors was also mentioned as a learning advantage of asynchronous e-learning. A range of these findings are developed further in this chapter under different themes and subthemes that emerged from the data analysis.

*Table 6.2. Comments that reflect the subtheme of Learning Advantages*

Participant	Comments
P4	It would help out in my goals, like when I want to learn vocabs, when I want to improve ... my goal to improve my speaking with my accent.
P6	It allows me to read books online, watch learning videos, learn what I need to learn.
P7	First of all, when I was learning on the traditional way, I was finding a hard ... How can I get the information? But now, hello, I have the internet, I have so many ways to get this information.
P8	I learned ways in communication, in writing in formal way and informal way with a teacher with students.
P10	I improved my ability to read because I need to read a lot. When I don't understand a word, I don't turn to the teacher or the doctor and ask him, I will open the dictionary, I will search online, I can even send an email to the course or the methods to ask him, "Can you give me examples?" I can learn.
P13	It helped a lot, because it gives me many sources, it gives me the chance to even ask people on the web. When you have a specific question, you can ask native speakers for example.
P14	In literature, I can have my own unique answers. Doctors like it when you write your own words. Yeah, I take the ideas from the internet, but I make it my own.

### **6.5. Theme: Learner Outcomes**

There were a range of subthemes generated from the data that reflected comments by respondents about the theme: learner outcomes. Broadly, these subthemes included Goal achievement, English skills, Exam performance, Independent learning and Evaluation of e-learning, which included the subthemes of Positive and Negative attitudes and Overall rating of asynchronous e-learning on a numerical scale. A few participants mentioned that asynchronous e-learning helped them achieve their goals. For example, *"Sometimes I need the information to achieve some goals. Sometimes I miss the information. Maybe I'm absent, maybe I did not fully understand it, so asynchronous learning helps with that"* (P14). Still, more participants focussed on how asynchronous learning impacted positively on the learning of English. This was exemplified by the comment, *"For example, if I'm trying to teach myself speaking. Online you can do it, you know? They will speak*

*with you, even the teacher. You will have response, they will see your mistakes, what you need to improve yourself, what you lack in this department”* (P10). Moreover, some participants mentioned that e-learning helps with the specific skills of learning vocabulary and translation, *“Some vocabs, I don’t find it in the books, but I find it in the website”* (P4) and *“I can translate whatever is hard for me easily”* (P6).

Two other important learner outcomes emerged as subthemes in the findings. One was the theme of Independent Learning; most participants reported that asynchronous e-learning developed their autonomous learning. A sample of comments relating to the impact of asynchronous e-learning are shown in Table 6.3. These comments show that the respondents found that an important benefit of asynchronous e-learning was that it developed their ability to be autonomous learners; learning how to learn. Such a skill is generally seen to be an important effect of asynchronous e-learning, wherein the need to search and find information for oneself promotes the capacity for independent learning. There were also a few comments that reflected the relationship between asynchronous learning and the subtheme of Exam Performance. Although some mentioned that asynchronous e-learning impacted positively on exam performance (e.g., *“we have to search for it so I think it helps to give me extra information and this has been resulted in a better grades on exams”* [P10].), most respondents didn’t claim a direct relationship and some claimed, *“It didn’t do that much but I think when the teacher gives me the lesson on a projector, or something, I remember the information so fast”* (P7). This latter point raises the comparison of e-learning to traditional teaching methods; a point that is developed with further data on this theme later in this chapter (section 6.9).

*Table 6.3. Comments that reflect the subtheme of Independent Learning*

Participant	Comments
P2	They have classes or lessons, or I can just read about it, or read the summary or ... that can develop my ability to learn.
P4	It's good for us, so we depend on ourselves, not on the teacher.
P9	It also taught me to be self-disciplined.
P10	It's positive if you can rely on yourself, if you have little bit of knowledge you can improve yourself to be better. For me I think I have been better because I rely on myself. I think it maybe gives the student experience to do everything alone without any support.
P11	I believe that self-study helps a lot, yeah. I see when the teacher gives us assignments and homework to search for, it helps me to improve my language, and particularly grammar, because I have to search in a correct way.
P13	And then I searched in that website, I found out that it's really interesting to learn by yourself. In this term I have learned how to learn by myself, so I am so totally satisfied.

Participants' attitudes toward asynchronous e-learning made up a further significant subtheme that emerged from the interview data. Most participants reported positive attitudes towards e-learning and a sample of these are shown in Table 6.4. Participants further emphasised the different benefits of asynchronous e-learning (e.g., ease of access and time savings) to back up their positive attitudes. Respondents were also asked to provide a rating out of 10 to indicate their evaluation of asynchronous e-learning. Consistent with their positive attitudes, 4 respondents rated asynchronous e-learning 10/10, 5 rated it 9/10, and 3 participants rated asynchronous learning 8/10. The other scores from one participant each were 7.5/10 and 7/10, while one respondent rated asynchronous learning quite low at 5/10 (P3). Altogether, the average level of positive attitudes toward asynchronous learning was 8.23/10.

*Table 6.4. Comments that reflect the subtheme of Positive Attitudes towards Asynchronous e-learning*

Participant	Comments
P1	It's helped a lot.
P4	It's helped me to advance myself when I research.
P6	It helped me in a good way, the way I can be confident.
P7	It's effective, I think it's better than face-to-face learning or the old traditional way.
P10	I just, I love it, actually. I'm learning now, another language in this method.
P11	See there's only positives, there is no negatives. It gives the chances for the students to go home and search more to find more sources.
P13	Yeah, asynchronous, I'm totally satisfied.

Despite the high level of positive attitudes toward asynchronous e-learning, there were nonetheless some negative attitudes which emerged as a subtheme of Learner evaluations in the data, a sample of which is shown in Table 6.5. As can be seen from the comments, negative attitudes were mostly centred on the limitations of the teacher/instructor, such as communication difficulties, a lack of knowledge or an over-reliance on asynchronous teaching methods. Two participants also mentioned that learners can be distracted or confused by broad information or postpone their work too easily. Although there were fewer negative numbers than positive numbers for the attitudes in the data relating to asynchronous learning, they appeared to reflect issues about factors external to the learner themselves, such as Instructor Characteristic and the quality of the learning material. These points are developed as distinct subthemes in the data in the following section.

*Table 6.5. Comments that reflect the subtheme of Negative Attitudes towards Asynchronous e-learning*

Participant	Comments
P6	Sometimes, the material itself is broad or not helpful so students get confused and distracted looking for the information they need.
P7	Because not so many teachers know how to deal with the method.
P9	Sometimes, like when I communicate with my teacher using the email, I don't get an instant feedback. She doesn't text me at the same time. I have to wait maybe two days, three days, and probably the problem I had will be too late for you to answer me now.
P12	This kind of method is not good for me, because whenever the teacher asks me to do something at home, I always postpone the homework or something.
P14	For the disadvantages, or the negatives, I think when sometimes instructors depend on it too much, and they don't give enough information in class, and sometimes it's not enough.
P15	Like you don't get the chance to see the body language and all of these things. It just the screen, two-dimensional.

## **6.6. Theme: Organisational Support**

Organisational support for asynchronous learning emerged as a distinct general theme in the data, thereby reflecting the importance of the role of faculty and administrative staff and management in delivering and providing quality and timely facilities and services. Indeed, two main subthemes were categorised under Organisational Support that reflected the central role of faculty and administration in the asynchronous e-learning environment: Instructor and University Support. Of the 15 respondents, 10 reported a lack of support from the University. Their comments included statements such as, *“No support. Even now I'm taking CALL, but we don't have labs, we can't go online. There's no service”* (P2); *“You don't have only one department, one small department, to support all the students in all the majors”* (P13); *“I'm seeing nothing, but if they do, I don't know about that. I'm seeing nothing”* (P1); and *“I think the university lacks in how they present the information”* (P10).



The other subtheme to emerge under Organisation support was Perceptions of instructors who employ asynchronous e-learning as a learning medium. As shown in a sample of statements in Table 6.6, the respondents found instructor support to be variable. On the one hand, some respondents reported good support from their instructors, especially those who are passionate about teaching. However, many respondents were critical of their instructor support in terms of their knowledge, ability or responsiveness. Not surprisingly, there was a view about the individual differences between instructors in terms of their support. As noted by P14, “*it depends on the teacher*”.

*Table 6.6. Comments that reflect the subtheme of Instructor Support for e-learning*

Participant	Comments
P2	Maybe teachers should give the students accurate websites that they can go online and search for certain information or certain topic.
P7	Because not so many teachers know how to deal with the method.
P9	They didn't have time for each individual student.
P10	I think the teacher can decide if it's better or not. If you have amazing teacher that provides everything and has great methods in teaching, then I think we will not need it. This semester I think they have the passion of teaching and I think that's important.
P12	Sometimes my doctor, my translation doctor, she usually send us websites to find the synonyms of this words, and how do you use this words in a context. It's helped me during the midterms.
P13	I don't think it's good enough, because teachers give us a slight knowledge of what they actually know.
P14	It depends on the teacher. Some teachers send just links when you ask them about something, but some make a lot of efforts. They make websites, or some group chats. Yeah, they make a lot of efforts, but some don't even bother. Some don't even reply to emails.

### **6.7. Theme: Technical Resources**

A further main theme that emerged from the data also reflects issues about asynchronous e-learning factors external to the learner themselves, i.e., Resources. The respondents made several comments that could be further categorised as subthemes; namely Technical Issues and the Quality of the Materials. In terms of

technical issues with the delivery of asynchronous e-learning, three respondents had negative views about the resources for the internet and labs at their University. For example, P7 said, *“the internet connection here is so bad”* and P6 said, *“to improve listening skills we need labs”*. In contrast, 3 respondents were positive about the technology to support asynchronous e-learning, with comments such as, *“I can multi task. I can perform better and faster. I can get things done faster”* (P9) and *“It helped a lot, because it gives me many sources, it gives me the chance to even ask people on the web”* (P13).

Similarly, there were mixed views about the quality of materials to support asynchronous e-learning, as shown by a sample of comments displayed in Table 6.7. In half of the cases, the material resources to support asynchronous e-learning are perceived as being good and helpful. Nevertheless, other respondents noted that the material resources to support asynchronous e-learning are not well-organised or there is a limited number of materials or the material is dated and not relevant. As noted by P9, poor quality materials mean that students have to be more independent in the search for other supportive materials, which may ultimately be a positive outcome, as shown by the comments relating to the subtheme of promoting independent learning through asynchronous teaching methods. Despite this benefit, some respondents reported the need for more precise, relevant and organised support materials and resources in the asynchronous e-learning environment to aid their learning experience.

Altogether, there were mixed views amongst the respondents about the resources to support asynchronous e-learning. On the subtheme of technical resources, some participants were concerned about internet lab access, whereas others were quite satisfied with the technical resources. There were also contrary

views about the quality of materials to support asynchronous e-learning, with some satisfied respondents and those who felt the resources were limited in terms of their organisation and relevance.

*Table 6.7. Comments that reflect the subtheme of Materials to support e-learning*

Participant	Comments
P3	I think it's good.
P6	In some subjects some materials are good and really helpful in terms of language learning, but some are not helpful. It's not good for learning the language, it's either boring or old.
P8	I prefer for it to be better. I prefer for it to be more. We have some teachers who won't use any kind of materials, but other teachers will use it only.
P9	It's not like the quality is good, I mean it's okay. It's not enough for you. You have to look up for other sources. Independently by yourself. You are by yourself. But generally, it's a good start. Like you get enough.
P11	It is helpful, sure, 100 percent it's helpful. Every single material the teacher gave us it's helpful.
P12	Good materials, good websites, yes, because usually if the students are not guided to good websites, they will go to wherever the easiest one.
P13	Sometimes the sources are not organised enough, or you can see much information mixed together. There are not enough sources for students to rely on. The sources mix knowledge.

### **6.8. Theme: Social Factors**

An unexpected, but nonetheless relevant theme to emerge from analysis of the data was the relationship between certain social factors and asynchronous e-learning. The main theme of Social Factors was further distinguished by reflecting the subtheme of the broader social context of Saudi Arabia and the subtheme of Social Interaction. With regards to the broader social context, P4 made two pertinent comments, “*Sometimes, they give us some topics that is not allowed in Saudi Arabia, like love etc*” and “*We have Islamic courses more than the course itself*”. Other than these comments, no other participant commented on issues related to Saudi culture and the use of asynchronous e-learning.

The second Social Factor subtheme of the relationship between asynchronous learning and Social Interaction was evidenced in more data from the interviews. One aspect that emerged amongst the data was how asynchronous learning helps those who are shy or lack confidence in a classroom setting using traditional teaching methods. Three participants expressed this point, with the more substantive statement made by P8, *“Some people do not have the self-confidence to talk in the class. They're afraid, they don't talk in public. They can't find the correct word. When I'm home alone, I can find the word. I can think about it.”* In contrast, one participant found the interaction that was accorded by asynchronous learning to be helpful, *“It also pulled me out of my comfort zone, helped me to interact with my classmates through social media or through emails or through chat groups or that kind help”* (P9).

### **6.9. Theme: Asynchronous Learning**

An important theme that emerged from the data was respondents' perceptions of alternative teaching methods and modes to asynchronous e-learning. Most comments were related to the subtheme of face-to-face teaching methods; generally labelled as the traditional method. The data shown in Table 6.8 reflects the main comments about the comparison of asynchronous e-learning to the traditional learning method of face-to-face teaching. Most participants perceived asynchronous learning to be superior, or at least equal to traditional teaching methods. Still, there were a few respondents who preferred traditional methods of face-to-face teaching and learning. This was principally due to their preference for contact and interaction as a more effective means of connecting with learning materials. A middle-ground position of hybrid teaching (combining asynchronous and traditional methods) appeared to be the preferred position of most respondents. This was further

evidenced in the respective subtheme of comments that reflected attitudes towards hybrid teaching, with the most representative statement being, “*We have to use both of them. We have to balance when to use this one and when to use this one*” (P11).

*Table 6.8. Comments that reflect the subtheme of Face-to-face teaching methods*

Participant	Comments
P3	If face-to-face education, you need to be on time, prepared, and well prepared for the lecture.
P4	We learn a lot of things comparing to the traditional way.
P6	Traditional learning is important for me, I can remember what the teacher say sometimes. Also, facial expression of the teacher are important for me, I can guess what the teacher means some time looking at her expression. We all need traditional learning.
P7	It's effective, I think it's better than face-to-face learning or the old traditional way.
P9	This kind of learning is superior or more advantageous than face-to-face traditional learning.
P10	Not better, but have some time advantage. I think the teacher can decide if it's better or not. If you have amazing teacher that provides everything and has great methods in teaching, then I think we will not need it.
P11	In some subjects, you need to face the teacher and to have that traditional method of teaching, not all the time technology, to be honest.
P12	No, it's not superior. However, there are some people who use online courses, which is good but it's not my type of learning.
P13	No, I don't see it as superior or more advantageous. I think it is equal to face-to-face education, because you cannot rely on online asynchronous learning, and at the same time you cannot rely only on face-to-face education.
P15	I feel like feeling things and touching things, seeing things like interact instantly with the teacher helps me a lot to perform better.

### **6.10. Theme: Barriers**

Barriers to the use of asynchronous e-learning were also identified as a main theme to emerge from the data and included the subthemes of Dependability, Distraction, Drawbacks and the Impact of Mood. One participant commented on the Dependability of asynchronous e-learning stating, “*I can't depend on it, completely*” (P3). A further three respondents reported that they can waste time or be distracted by other internet activities when they are attempting to study with asynchronous e-

learning, with P6 stating, *“Sometimes, I get distracted by other websites, like social media ones and irrelevant YouTube videos”*. Moreover, one respondent noted that the current mood can be a barrier to using asynchronous e-learning, *“Sometimes, you are not maybe in the mood to study”* (P2); however, it is worth noting that mood is likely to be a personal barrier across different learning modes.

Most of the comments relating to Barriers reflected the subtheme of Drawbacks to asynchronous e-learning. Overlapping with other subthemes (e.g., Negative Attitudes), respondents identified the lack of access to a teacher and the internet, as well as the quality of the learning materials as drawbacks to asynchronous e-learning. For example, P10 stated, *“It's hard for me without the teacher, without someone to translate anything. In this method you need to rely on yourself more than anything”*. On the issue of access, P15 stated, *“You do not get the chance to access the internet all the time”*, and P13 identified the quality of materials as a drawback to asynchronous e-learning, *“Sometimes, the sources are not organised enough, or you can see much information mixed together”*. Despite these comments, there were only a few participants who mentioned some drawbacks to the use of asynchronous e-learning. As shown in previous data, most respondents generally held positive attitudes towards asynchronous e-learning.

### **6.11. Theme: Recommendations**

A final theme that emerged from the data reflected recommendations by the respondents to improve different elements of asynchronous learning. Most respondents had at least one recommendation to improve asynchronous e-learning, with a sample of the main comments shown in Table 6.9. Apart from recommending a higher usage and general improvement of asynchronous e-learning, respondents specifically recommended more support resources (e.g., internet access, labs), more

technical support, accurate learning materials and adapting learning materials to the Saudi context. Overall, recommendations appeared to relate to some of the drawbacks and negative views about asynchronous e-learning as expressed under other themes.

*Table 6.9. Comments that reflect the subtheme Recommendations to improve Asynchronous e-learning*

Participant	Comments
P1	We need to use asynchronous technology more often.
P2	Maybe teachers should give the students accurate websites that they can go online and search for certain information or certain topic.
P5	Labs, and libraries, and computers, internet. We don't want to use it for entertainment. Just use it for searching information.
P6	In terms of e-learning, the foundation year of English learning need to be more supported technically, to help students who don't have any previous experience in English to learn English quickly and easily.
P10	They can put examples from Saudi Arabia, as that will make the people here more interested or understand more.
P11	To provide the internet access, and computer labs. This will be good.
P13	I think that they should provide technicians and all the enough needs for PhD, or even undergraduate students.
P15	I believe they need to improve the eLearning because, you know, this is what they call the technical revolution age. So, we need to improve these things. We need to use more technology in learning.

## 6.12. General Discussion of the Findings

Altogether, the results of this qualitative study provide findings that address the research questions of this thesis. With respect to the first research question (**RQ1**), qualitative findings show that the quality and effectiveness of ICT information was related to learners' evaluation of the effectiveness of asynchronous e-learning. To respond to **RQ2**, the infrastructure of ICT figured highly in the evaluation of the effectiveness of asynchronous e-learning in this study, giving support to the expectation that higher performance of an ICT system predicts learners' evaluation of the effectiveness of asynchronous e-learning, at least with respect to the performance of the ICT technical infrastructure. The qualitative findings of this study also provided data to address **RQ3**, by showing reasons why

asynchronous e-learning had a positive impact on individual users' learning. Participants reported that asynchronous e-learning helped them achieve their educational goals and was instrumental in developing their skills, especially with regards to their capacity to learn and speak English. The findings also provided insights with respect to **RQ4** and suggested a range of organisational factors (e.g., supportive instructors, learning community) that are related to learners' evaluation of the effectiveness of asynchronous e-learning. Qualitative findings showed mixed attitudes toward the instructor, with some respondents reporting good support from their instructors, especially those who are passionate about teaching, but more respondents were critical of their instructors' support in terms of their knowledge, ability or responsiveness. At the university level, most respondents reported a lack of organisational support for delivering and providing effective and timely facilities and services.

### **6.13. Summary and Conclusion**

This chapter presented the findings from a qualitative study of student perceptions of asynchronous e-learning. Fifteen Saudi female undergraduate students who were taking English Language courses via asynchronous blended learning were recruited as participants in this qualitative study to undertake semi-structured interviews about their perceptions of asynchronous e-learning. The interviews were then analysed and coded with the aid of the qualitative software program, NVivo 11. Using phenomenological analysis, a set of themes and subthemes were derived from this analysis to reflect the main concepts of this study and address the research questions. The main themes to emerge from the coding of the interview data on perceptions of asynchronous e-learning included *Benefits*, *Learner Outcomes*,



*Organisational Support, Technical Resources, Social Factors, Asynchronous Learning, Barriers to Use and Recommendations.*

Reflecting the theme of Perceived Benefits, the findings showed a range of learning advantages of asynchronous e-learning of English, including improving students' ability to learn vocabulary and their communication skills. In a more general sense, participants also reported the learning advantage of being able to access many different resources through asynchronous e-learning and having greater access to teachers and instructors. The findings also showed many positive learner outcomes to asynchronous e-learning as reported by the participants, including goal achievement, exam performance and developing the ability for independent or autonomous learning. Participants further showed a range of positive and negative attitudes towards asynchronous e-learning. Most participants reported positive attitudes towards e-learning and emphasised the different benefits of asynchronous e-learning (e.g., ease of access and time savings) to back up their positive attitudes. Consistent with their positive attitudes, the average level of satisfaction with asynchronous learning was rated highly. Although there were fewer negative than positive attitudes in the data relating to asynchronous learning, they appeared to reflect issues and barriers about factors external to the learners themselves, such as Instructor Characteristic and the quality of the learning material.

Two other important general themes emerged from the interview data that reflected factors external to the learners: Organisation and Resource Support for asynchronous e-learning. Participants generally found University support to be significantly lacking and Instructor support to be variable. Whereas some respondents found good instructor support, others were critical of their instructor support in terms of their knowledge, ability or responsiveness. Similarly, there were

mixed views amongst respondents about the *Resources* to support asynchronous e-learning; some participants were concerned about internet lab access and the quality of learning materials, whereas others were quite satisfied with the technical resources and learning materials.

In conclusion, the findings from the qualitative analysis of the interview data with Saudi female undergraduate students who were taking English Language courses showed a generally positive attitude toward asynchronous blended learning. Nevertheless, respondents also reported a range of negative attitudes and drawbacks associated with asynchronous learning with regards to organisational and instructor support, as well as supportive technical and learning resources.

Finally, the participant data revealed themes that reflected their views about alternative teaching methods and recommendations on how to improve their experience of asynchronous e-learning. In general, respondents supported hybrid learning methods, with a combination of asynchronous and traditional face-to-face learning and teaching methods, and made recommendations about desirable improvements that were aligned with their critical views of asynchronous e-learning. The next chapter provides a full discussion of the quantitative and qualitative findings of this thesis, with respect to the research questions and in terms of their empirical, theoretical and practical implications for developing knowledge about the phenomenon of asynchronous e-learning.

## **Chapter 7: Discussion and Conclusion**

### **7.1. Introduction and Chapter Overview**

To address a gap in the research knowledge and contribute to education initiatives, the aim of this thesis is to investigate the effectiveness of asynchronous learning generally and, in particular, with Saudi female higher education students undertaking English studies. Based on the IS-Success/Impact model (e.g., Alkhalaf, et al., 2010; Myers, Kappelman & Prybutok, 1997), the research in this thesis investigated four components of the success and impact of Information Communication Technology (ICT): the quality of information produced, the performance of a system from a technical perspective, the impact on individual users, and the impact on the relevant organisation. The central research questions addressed in the empirical component of this thesis are as follows:

**RQ1.** To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ2.** How does the technical performance of the ICT system predict learners' evaluation of the effectiveness of asynchronous e-learning?

**RQ3.** Why is asynchronous e-learning related to a positive impact on individual users' learning and learning outcomes?

**RQ4.** How do organisational factors (supportive instructors, learning community) predict learners' evaluation of the effectiveness of asynchronous e-learning?

To address these research questions, the empirical part of this thesis entailed a mixed-method research design to collect quantitative survey data (Phase 1) and qualitative interview data (Phase 2) to investigate the effectiveness of asynchronous blended learning in developing English language skills amongst female higher

education students in Saudi Arabia. A sample of 103 Saudi female undergraduate students completed a self-report, E-Learning CSF Instrument, in Phase 1, while 15 female Saudi undergraduate students also participated in qualitative interviews in Phase 2 to collect data on their attitudes towards the experience of asynchronous e-learning.

This chapter commences with a review and integration of the central findings as they relate to the research questions of this thesis. Section 7.2 and 7.3 of this chapter relate the findings to current research and provides a discussion of their theoretical and practical implications for the knowledge and application of asynchronous e-learning to educational environments generally, and the Saudi education context, specifically. The limitations of the findings and suggestions for future research are presented in section 7.4 of this chapter before a final section (7.5) provides the summary and conclusion to the thesis.

## **7.2. A Review and Integration of the Findings**

- **Response to Research Question 1: To what extent does the quality and effectiveness of ICT information in terms of positive learning outcomes predict learners' evaluation of the effectiveness of asynchronous e-learning?**

With respect to the first research question of this thesis, quantitative and qualitative findings from Chapter 5 (see section 5.6) and Chapter 6 (see section 6.7) respectively, show that the quality and effectiveness of ICT information is related to learner's evaluation of the effectiveness of asynchronous e-learning. Overall, the participants in the quantitative study reported a positive attitude towards the quality and effectiveness of their ICT learning platforms, by indicating that the structure of the e-learning components was easy to understand, the course content was sufficient and related to the subject and the instructions on using the e-learning components

were sufficiently clear. Moreover, the student attitudes towards the quality of the ICT system predicted the positive evaluations of the effectiveness of asynchronous e-learning. This finding was echoed amongst the qualitative interview data, wherein most participants reported positive attitudes towards e-learning and emphasised the different benefits of asynchronous e-learning (e.g., ease of access and time savings). Consistent with their positive attitudes, the average level of positive attitudes toward asynchronous learning was very high (8.23 out of 10). Thus, the findings of this study provided a good support to the expectation that a higher quality and the effectiveness of ICT information predicts learners' positive evaluation of asynchronous e-learning.

The finding that the effectiveness of ICT information in asynchronous e-learning environments is associated with learner positive evaluations confirms and extends previous research. For example, Pinto-Llorente, et al. (2017) also reported that Spanish university students showed mostly positive perceptions and attitudes about the technological tools used for asynchronous learning (e.g., podcast, videocast, online tests, online glossary and forums). These positive perceptions and attitudes were also associated with increased autonomous learning among the students. Likewise, the students in the current study also reported how their independent learning skills have increased due to asynchronous learning, which would appear to be influenced by ICT.

**• Response to Research Question 2: How does the technical performance of the ICT system predict learners' evaluation of the effectiveness of asynchronous e-learning?**

The findings relating to RQ2 indicated two different aspects of technical performance of the ICT system, as it is related to students' evaluation of the

effectiveness of asynchronous learning. The analysis of survey questions in Chapter 5 (section 5.6), relating to the technical aspects of the ICT system, generated two distinct components: attitudes towards the technical infrastructure and attitudes towards the technical learning platform. Although the attitudes towards the learning platform were positive, student perceptions of the technical infrastructure were comparatively negative. Similarly, qualitative findings from Chapter 6 (section 6.7) showed that students held positive views about the learning platform, but reported negative attitudes about the infrastructure, especially with the internet speed and connection and the lack of labs. Reflecting these contrasting attitudes, the findings also showed that a positive attitude towards the technical infrastructure, rather than the learning platform, was a significant predictor of positive evaluations of asynchronous e-learning. Thus, it appears that the infrastructure of ICT figured highly in the positive evaluations of students, with asynchronous e-learning giving support to the observation that a higher performance of an ICT system predicts learners' evaluation of the effectiveness of asynchronous e-learning; at least with respect to the performance of the ICT technical infrastructure.

Like the current study, previous research has shown how negative perceptions of the quality of technical performance of an ICT system are associated with lower learner evaluations of the effectiveness of asynchronous learning. Both Ishtaiwa and Abulibdeh (2012) and Reifschneider (2009) showed that barriers such as technology and connectivity issues are associated with perceptions of lower quality and effectiveness of online education. Moreover, Wang (2003) also found that satisfaction with e-learning can be predicted by the quality of the ICT infrastructure. Nonetheless, the current set of findings extends the research by showing attitudes towards the technical infrastructure (rather than the learning

platform), which is a significant predictor of positive evaluations of the effectiveness of asynchronous e-learning.

**• Response to Research Question 3: Why is asynchronous e-learning related to a positive impact on individual users' learning and learning outcomes?**

The qualitative findings presented in Chapter 6 (see section 6.4) of this thesis provide data to address RQ3, by showing the reasons why asynchronous e-learning has a positive impact on individual users' learning. Participants reported that asynchronous e-learning helped them achieve their educational goals and was instrumental in developing their skills, especially with regards to their capacity to learn and speak English. Importantly, qualitative findings in Chapter 6 (see section 6.5) also showed that asynchronous e-learning helped students become independent and autonomous learners. For example, P10 stated, "It's positive if you can rely on yourself; if you have little bit of knowledge you can improve yourself to be better. For me, I think I have been better because I rely on myself." Moreover, some participants reported that asynchronous e-learning also helped with their exam performance. As such, this set of findings provide support for the expectation that asynchronous e-learning has a positive impact on individual learners and learning outcomes.

Previous research has similarly shown the positive effect of asynchronous learning on learning outcomes. Consistent with the findings of Pinto-Llorente, et al. (2017), that students reported the efficacy of the blended learning materials for improving their grammatical abilities, the participants in the current study reported that asynchronous learning was instrumental in developing their English-speaking abilities. Moreover, the students in this study reported that asynchronous learning has

a positive impact on their test and exam performance, as similarly attained in previous research (e.g., Al-Qahtani & Higgins, 2012; Freihat & Zamel, 2014; Northey et al., 2015). Importantly, the results of this study also confirmed past research (e.g., Snodin, 2013; Prior et al., 2016), that asynchronous learning has a positive impact on developing autonomous learning among students.

**• Response to Research Question 4: How do organisational factors (supportive instructors, learning community) predict learners' evaluation of the effectiveness of asynchronous e-learning?**

The findings also provide insights with respect to RQ4 and suggest a range of organisational factors (supportive instructors, learning community) that are related to learners' evaluation of the effectiveness of asynchronous e-learning. Quantitative findings presented in Chapter 5 (see section 5.5) showed that Instructor Characteristics, such as the level of encouragement, as well as the enthusiasm and interest shown by the instructor, factored highly into respondents' evaluation of asynchronous e-learning. Indeed, quantitative findings show the average positive rating of instructor characteristics with respect to supporting asynchronous e-learning was significantly high at 4.56 on a 6-point scale. However, qualitative findings presented in Chapter 6 (see section 6.6) showed mixed attitudes towards the instructor, with some respondents reporting good support from their instructors, especially those who are passionate about teaching. However, more respondents were critical of their instructor support in terms of their knowledge, ability or responsiveness. At the university level, most respondents reported a lack of organisational support for delivering and providing quality and timely facilities and services. This finding was reflected in qualitative findings shown in Chapter 6 (see section 6.6), where the rating of support was quite low. It would appear that higher



quality organisational factors did relate significantly to learners' positive evaluation of asynchronous e-learning, but in a negative direction; most of the negative evaluation of asynchronous e-learning was related to poor quality organisational support factors.

The finding that organisational support was related to positive evaluation of asynchronous learning is also consistent with previous research. On one level, the quality of teachers and instructors were reported by the participants in this study to be an important factor in their attitudes towards asynchronous learning. As found in other research (e.g., Ishtaiwa & Abulibdeh, 2012), students reported low evaluation of the effectiveness of asynchronous learning when the knowledge, ability, support and responsiveness of instructors was low. The findings were also consistent with research by Deci et al. (1981), that teachers who encourage autonomous learning are instrumental in developing greater intrinsic motivation to learn among their students. At the organisational level, the findings of this thesis extend past research by Ziyadah (2012), that poor organisational support is related to the negative perceptions of asynchronous learning among teachers. In the current study, students similarly reported that a lack of organisational or university support, in terms of providing quality services and facilities, was associated with their negative perceptions of asynchronous learning.

Interview data from the qualitative research phase of this thesis provided additional pertinent observations about female Saudi students' perceptions of asynchronous e-learning, apart from those directly related to the research questions. One additional theme to emerge from the qualitative interview data presented in Chapter 6 (see section 6.10) is the perceived barriers to asynchronous learning. These include the dependability of e-learning, being distracted by other internet content and

finding negative mood states to impact on the willingness to study via asynchronous e-learning. With regards to the broader social context, only two participants commented on issues related to the Saudi culture and the use of asynchronous e-learning, stating that some topics are not allowed in Saudi Arabia, and that there is a focus on Islamic courses more than the major course itself. Finally, participants' qualitative data from Chapter 6 (see section 6.9) revealed themes that reflected their views about alternative teaching methods and recommendations on how to improve their experience of asynchronous e-learning. In general, respondents supported hybrid learning methods with a combination of asynchronous and traditional face-to-face learning and teaching methods and made recommendations on desirable improvements that were aligned with their critical views and perceptions of asynchronous e-learning.

Overall, the findings showed a range of learning advantages of asynchronous e-learning of English, including improving student ability to learn vocabulary and communication skills. In a more general sense, participants also reported the learning advantage of being able to access many different resources through asynchronous e-learning and having greater access to teachers and instructors. The findings also showed several positive learner outcomes from asynchronous e-learning as reported by the participants, including goal achievement, exam performance and developing the ability for independent or autonomous learning. Furthermore, the participants showed a range of positive and negative attitudes towards asynchronous e-learning. Most participants reported positive attitudes towards e-learning and emphasised the different benefits of asynchronous e-learning (e.g., ease of access and time savings) to back up their positive attitudes. Consistent with their positive attitudes, the average level of positive attitudes toward

asynchronous learning was high. Although there were fewer negative than positive attitudes in the data relating to asynchronous learning, they appeared to reflect issues and barriers related to factors external to the learner, such as the Instructor Characteristic and the quality of the learning material.

### **7.3. Implications of the Findings**

The findings of this thesis raise several empirical, theoretical and practical implications that advance the knowledge and application of asynchronous e-learning in the field and profession of education and learning. There has been a number of previous studies that investigated the efficacy of blended learning and teaching approaches, including those that focussed on the benefits of asynchronous web-based instruction methods (e.g., Al-Dosari, 2011; Garrison & Kanuka, 2004). Similar to previous research (e.g., Ishtaiwa & Abulibdeh, 2012; Reifschneider, 2009), the findings of this thesis confirmed that obstacles to asynchronous e-learning, such as technology and connectivity barriers are associated with perceptions of lower quality and the effectiveness of online education. Moreover, the current study clarified that it was the infrastructure of ICT, rather than ICT platforms *per se*, that figured negatively in the student's evaluation with asynchronous e-learning.

A further and important indicator of the success of asynchronous blended learning is how students actually perform in terms of their grades and learning outcomes. Few studies, apart from recent research by Northey, Buic, Chylinski, and Govind (2015), have determined the impact of asynchronous e-learning on exam performance, where students report a higher final grade and improved learning engagement. The qualitative findings reported in this thesis further show that asynchronous e-learning has a positive impact on students' exam performance, helps

them achieve their educational goals, and is instrumental in developing their skills, especially with regards to their capacity to learn and speak English.

The positive impact of asynchronous teaching methods on students' ability to learn and speak English has been similarly shown in other research. For example, studies by Pinto-Llorente et al. (2017), Snodin (2013) and Al-Dosari (2011) have shown asynchronous e-learning to be effective with Spanish, Thai and Saudi students, in terms of improving their English grammatical abilities, like parts of speech, types of sentences and word formation. Likewise, female Saudi undergraduates in this study focussed on how asynchronous educational materials impacted positively on their learning of English for improving vocabulary and translation skills. Given that the English language has a relatively important role in contemporary Saudi society (Faruk, 2013), the results of this study suggest that asynchronous instruction in English can meet the Saudi Ministry's objectives (Al-Seghayer, 2014) to develop and deploy English skills and capacities amongst its people, as a competitive advantage in business and trade, as well as communication and technology development.

Importantly, the findings of this study contribute to the knowledge about the effectiveness of asynchronous e-learning to the educational objectives of Saudi women. Although previous research in the Saudi educational context has been conducted on the effectiveness of asynchronous e-learning among women in a range of subject areas (e.g., Alkhatabi, 2014; Al-Qahtani & Higgins, 2012; Ziyadah, 2012; Zouhair, 2012), there has been no reported studies on whether or not asynchronous instruction in English is effective with Saudi women. Despite some limits to the technology and level of organisational support, the findings of this thesis suggest that asynchronous instruction in English is an effective teaching method for female Saudi

undergraduates. Moreover, the findings of this thesis suggest that the employment of asynchronous e-learning methods provides a greater range of access opportunities to women, so that they can pursue their studies effectively.

From a theoretical perspective, the findings of this thesis support the proposition that asynchronous learning environments would likely encourage autonomous learning (Cameron, 1989; Reese, 2015). Learner autonomy is generally understood as the ability of a learner to be responsible for his or her own learning through preparing, applying, checking and assessing their own direction and progressing towards building a set of new skills, in discussion with their instructors (e.g., Boud, 1981; Nguyen, 2014). As shown in the current study, respondents found that an important benefit of asynchronous e-learning was that it developed their ability to be autonomous learners; learning how to learn. Such a skill is generally seen to be an important effect of asynchronous e-learning, wherein the need to search and find information for oneself promotes the capacity for independent learning. Similarly, a range of other studies in other cultures give weight to the assumption, that creating an autonomous learning style among learners, would lead to educational and learning benefits (e.g., Benson, 2001; Creswell, 2000; Dam, 2008; Dias, 2000; Hobrom, 2004; Littlewood, 1999). The findings of this study are among the first in the Saudi context to support the theory that asynchronous e-learning would develop the autonomous learning capacities of female undergraduate students of English.

The theoretical framework to investigate the effectiveness of asynchronous e-learning in this thesis is the Information System-Success/Impact model (e.g., Alkhalaf, et al., 2010; Myers, Kappelman & Prybutok, 1997), which puts forward four components relating to the success and impact of IT: the quality of information produced; the performance of a system from a technical perspective; the impact on

individual users and the impact of the relevant organisation, in terms of instructors and organisational support. The framework and the self-report E-Learning CSF Instrument employed in the quantitative phase of this study, provide a useful perspective to investigate the effectiveness of asynchronous e-learning, whereas the data from the qualitative phase of this thesis suggest that other elements may be usefully employed to frame the research on asynchronous e-learning. One important element to be examined is the barriers to e-learning.

As revealed by qualitative interviews, barriers to asynchronous e-learning include the distraction by other internet content that is not likely to be relevant to the learning objectives; the reliability and dependability of the e-learning content and the effects of mood on motivations to engage with e-learning. A further element that emerged from the qualitative findings that may be considered in the framework of effective e-learning is the impact of social and cultural factors. It is likely that the effectiveness of asynchronous e-learning may vary in different social and cultural contexts. In Saudi Arabia, the motivation for women to use e-learning may be especially high, given that there are cultural and religious factors that may impede or even exclude them from face-to-face learning. Although only a few participants mentioned cultural issues when it came to the learning content, how well an asynchronous e-learning system performs and the extent to which it is utilised by students, may reflect the cultural constraints imposed by a particular society.

In terms of practical implications, the interview data from the qualitative findings of the thesis provide several recommendations for improving the effectiveness of asynchronous e-learning. Apart from recommending a higher usage and general improvement of asynchronous e-learning, respondents specifically recommended more support resources (e.g., internet access, labs), more technical

support, accurate learning materials, and adapting learning materials to the Saudi context.

A further practical implication of the findings relates to the efficacy of asynchronous e-learning compared to traditional face-to-face teaching methods. Despite the development of asynchronous blended learning over recent years to provide a method for students and teaching staff to communicate with greater flexibility and achieve greater learning autonomy, there is much discussion and debate about whether online educational options undermine educational objectives or offer significant benefits necessary to develop students and learners effectively, over and above face-to-face teaching and learning (Reese, 2015). Indeed, some participants preferred contact with a teacher via face-to-face instruction to better facilitate their learning as demonstrated by the findings reported in Section 6.9.

A middle ground between these two positions is the blended learning approach, which balances asynchronous and synchronous learning opportunities, to facilitate communication and collaboration among classmates and instructors (Vaughan, 2010). Although the findings showed some participants perceived asynchronous learning to be superior, or at least equal, to traditional teaching methods, there were a few respondents who preferred traditional methods of face-to-face teaching and learning. This was principally due to participant's preference for contact and interaction as a more effective means of connecting with the learning materials. Nevertheless, a middle-ground position of hybrid teaching appeared to be the preferred position of most respondents. The implication here is that teachers, IT support personnel, and educational policy makers need to find the right balance between asynchronous e-learning and the traditional teaching style to best serve the educational and learning objectives of students and learners.

#### **7.4. Limitations and Future Directions**

Despite the theoretical and practical implications of the findings of this thesis, there are several methodological limitations to the design and execution of the study that impact on the generalisability of the findings. In terms of the quantitative study (Phase 1), the sample of participants was limited by the number of respondents to the E-Learning CSF Instrument, especially as the respondents to the survey were a relatively homogenous group of Saudi women completing undergraduate studies in English at the same university. As such, any inferences made from the current findings about the effectiveness of asynchronous e-learning among other groups of learners or those students in different subject areas should be treated with relative caution.

A further limitation of the quantitative findings is that the correlational nature of the research design does not produce information about definitive cause-effect relationships between using asynchronous e-learning and learner evaluations. Nevertheless, the correlational method provided several practical and pragmatic benefits in this study, including the capacity to simultaneously investigate a range of concepts related to the evaluation of the effectiveness of asynchronous e-learning. As shown by the high reliability scores of the E-Learning CSF Instrument scales that reflected e-learning perceptions, the survey questionnaire format provided a relatively useful and efficient means of data collection.

There are also several limitations to the findings from the qualitative research phase of this thesis. Even though qualitative methods like Interpretive Phenomenological Analysis (IPA) adopted in this study generate a rich set of data, it is not without its limitations. Indeed, Willig (2008) notes that the IPA method does not provide researchers with necessarily objective findings; researchers may be



vulnerable to a subjective reading of meanings as a result of their own biases and preconceptions. At the same time, IPA methods do not provide cause-effect laws, thus limiting the generalisability or predictive capacity of the findings. This is particularly the case with the current research study, where a certain focus and set of research questions was used on a small and comparatively specific sample size. Nevertheless, the research methods selected for this study are based on a thorough and objective analysis of previous research methods in the field. Moreover, a satisfactory sample size was recruited in the qualitative study that was consistent with the criteria for data saturation (Guest et al., 2006). Both the self-report and qualitative interview research materials were validated for the study via pilot testing, and the interview data was objectively coded. Importantly, the use of quantitative and qualitative methods to investigate the research questions of this thesis provided a certain level of validity to the findings through data triangulation (Creswell, 2012), as the data from each method could be cross-checked to more carefully determine the factors that promote positive evaluations of asynchronous e-learning.

The findings of this thesis suggest several directions for future research on the effectiveness of asynchronous e-learning. Although the findings of this thesis focussed on the experience of Saudi women learning English via asynchronous e-learning, future research might expand the sample to include men and other subject areas, so as to improve the generalisability of the current set of findings. It would also be worthwhile to determine if asynchronous e-learning has a direct impact on performance via objective measures, such as exam results. To do so, it would be important to conduct experimental research that entails pre and post-tests of the effects of learning intervention on knowledge and performance and thus, overcome some of the limitations of correlational research designs. Indeed, a few quasi-

experimental studies have shown the effectiveness of asynchronous e-learning in the Saudi educational context (e.g., Al-Qahtani & Higgins, 2012; Freihat & Zamel, 2014). As technology related learning is constantly improving, current asynchronous e-learning is likely to more strongly affect student performance and such an effect would be more definitively shown via a pre and post-test learning intervention study.

The framework that was employed to investigate the effectiveness of asynchronous e-learning in this thesis was the Information System-Success/Impact model (Selim, 2007), however, future research might draw on models that focus on student's acceptance of technology. For example, the Unified Theory of Acceptance and Use of Technology (UTUAT; Venkatesh, Thong & Xu, 2012) proposes that performance and effort expectancies, social influence, and facilitating conditions are the focal predictors of technology acceptance. It would be worthwhile investigating if student's acceptance of technology in terms of expectancies and social influence mediate their positive evaluation of asynchronous e-learning.

An avenue for future research would be to take into consideration the broader social and cultural factors that may moderate the effectiveness of asynchronous e-learning. As highlighted in this thesis, it is likely that the effectiveness of asynchronous e-learning may vary in different social and cultural contexts. In Saudi Arabia, the motivation for women to use e-learning may be especially high, given that there are cultural and religious factors that may impede or even exclude them from face-to-face learning. Cross-cultural research on the effectiveness of asynchronous e-learning would help to identify the varying social factors that may facilitate or impede the success of this method of teaching and learning.

Finally, the research participants in this study spoke of the issue of hybrid learning methods, with some recommending a combination of asynchronous and face-to-face teaching methods. Although some studies have compared the effectiveness of asynchronous and face-to-face teaching methods (e.g., Al-Qahtani & Higgins, 2012; Ge, 2012; Northey et al., 2017), there is no reported research to test the effectiveness of blended learning in the Saudi education context. Given the complementary benefits of asynchronous and face-to-face teaching methods, one might predict that hybrid learning approaches would be comparatively more effective than either of these methods alone. As stated by one participant in this study, “*We have to use both of them. We have to balance when to use this one and when to use this one*”.

## **7.5. Summary and Conclusion**

This thesis sets out to investigate the effectiveness of asynchronous e-learning for Saudi women completing undergraduate studies in English. Overall, it was expected that higher ratings of the quality of learning information; the performance of the learning system from a technical perspective; the impact on individual users and the impact of the relevant organisational support will be positively correlated with higher positive evaluations of the effectiveness of asynchronous e-learning. Two studies were conducted to investigate this expectation and address a series of research questions generated from a review of the current research. Both quantitative and qualitative methods were employed, thereby providing a reasonable level of cross-validation for the findings.

Overall, the findings from this research showed that students have a comparatively high level of positive views toward asynchronous e-learning, as this teaching and learning method contributed to positive outcomes in terms of learning

English and developing an autonomous learning style among participants in this research. Nevertheless, the study highlighted some problems with asynchronous e-learning. Although the attitudes towards the learning platform were positive, student perceptions of the technical infrastructure were comparatively negative. Similarly, qualitative findings showed that students held positive views about the learning platform but reported negative attitudes about the infrastructure, especially with the internet speed and connection and the lack of labs. Moreover, qualitative findings showed mixed attitudes towards the instructor, with some respondents reporting good support from their instructors, especially those who are passionate about teaching, while other respondents were critical of their instructor support in terms of their knowledge, ability or responsiveness. At the university level, most respondents reported a lack of organisational support for delivering and providing quality and timely facilities and services.

In conclusion, the quantitative and qualitative findings of this thesis suggest that asynchronous e-learning appears to provide a promising and effective method for developing the English capacities of female Saudi students and to meeting the Saudi Ministry's objectives (Al-Seghayer, 2014) of developing and deploying English skills and capacities amongst its people. The findings also showed several positive learner outcomes from asynchronous e-learning as reported by the participants, including goal achievement, exam performance and developing the ability for independent or autonomous learning. Moreover, the findings of this thesis suggest that the employment of asynchronous e-learning methods provides a greater range of access opportunities to women, so that they can pursue their studies effectively. Nevertheless, it is important that some of the barriers and problems identified in this thesis are addressed so as to fully exploit the benefits of

asynchronous learning. At the same time, qualitative findings of this thesis showed that hybrid approaches to teaching and learning, where education involves a balance between asynchronous e-learning and traditional face-to-face instruction, is a favoured approach to learning and worthy of further research and investment of educational resources to maximise its potential as an effective learning approach.

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## Appendix A: E-Learning CSF Instrument

Please read each of the following statements about E-learning and respond with the following key to indicate how much you agree with each statement. Write your response in the blank column next to each statement.

1 = Strongly Disagree

2 = Disagree

3 = Slightly Disagree

4 = Slightly Agree

5 = Agree

6 = Strongly Agree

INS1	The instructor is enthusiastic about teaching the class	
INS2	The instructor's style of presentation holds my interest	
INS3	The instructor is friendly towards individual students	
INS4	The instructor has a genuine interest in students	
INS5	Students felt welcome in seeking advice/help	
INS6	The instructor encourages student interaction	
INS7	The instructor handles the e-learning units effectively	
INS8	The instructor explains how to use the e-learning components	
INS9	I feel the instructor is keen that we use the e-learning based units	
INS10	We were invited to ask questions/receive answers	
INS11	We were encouraged to participate in class	
INS12	The instructor encourages and motivates me to use e-learning	
INS13	The instructor is active in teaching me the course subjects via e-learning	
STD1	The e-learning encourages me to search for more facts than the traditional methods	
STD2	The e-learning encourages me to participate more actively in the discussion than the traditional methods	
STD3	I enjoy using personal computers	
STD4	I use the personal computers for work and play	
STD5	I was comfortable with using the PC and software applications before I took up the e-learning based courses	
STD6	My previous experience in using the PC and software applications helped me in the e-learning based courses	
STD7	I am not intimidated by using the e-learning based courses	
STD8	I learn best by absorption (sit still and absorb)	
STD9	I learn best by construction (by participation and contribution)	
STD10	I learn better by construction than absorption	
STD11	I only read messages in the discussion group	
STD12	I do read as well as participate in the discussion group	
STD13	The instructor initiated most of the discussion	
STD14	The students initiated most of the discussion	
STD15	The instructor participated actively in the discussion	
STD16	I found the instructions on using the e-learning components to be sufficiently clear	

STD17	I found the course content to be sufficient and related to the subject
STD18	It was easy to understand the structure of the e-learning components
STD19	It was easy to navigate through the Blackboard/course web
STD20	The e-learning components was available all the time
STD21	The course materials were placed online in a timely manner
STD22	I perceive the design of the e-learning components to be good
TEC1	Easy on-campus access to the Internet
TEC2	Did not experience problems while browsing
TEC3	Browsing speed was satisfactory
TEC4	Overall the website was easy to use
TEC5	Information was well structured/presented
TEC6	I found the screen design pleasant
TEC7	I could interact with classmates through the web
TEC8	I could easily contact the instructor
TEC9	I can use any PC at the university using the same account and password
TEC10	I can use the computer labs for practicing
TEC11	I can rely on the computer network
TEC12	I can register courses online using Banner
TEC13	Overall the Information Technology infrastructure is efficient
SUP1	I can access the central library website and search for materials
SUP2	I can get technical support from technicians
SUP3	I think that the IMSIU e-learning support is good
SUP4	There are enough computers to use and practice
SUP5	I can print my assignments and materials easily

## **Appendix B: Semi-structured Interview Protocol**

- Please describe your overall experience of a-synchronous learning methods.
- Tell me how asynchronous education methods have developed your ability to learn independently?
- How has asynchronous learning impacted on your performance in exams and tests?"
- Please comment on the quality of the material you work with in this learning environment... with the materials you work with, so like the books, the learning materials, so just comment on it.
- Describe how much interaction you have with the content and instructors in asynchronous blended e-learning.
- How do the technical requirements for asynchronous learning meet your learning objectives?
- Describe the positives and negatives aspects of asynchronous blended e-learning according to the learners' conceptions. In general, how would you describe this?
- What are the benefits and drawbacks of asynchronous learning in your experience?
- Please comment on the level of satisfaction (or dissatisfaction) you have with asynchronous learning.
- Provide a description of how you find asynchronous learning to be superior or more advantageous than traditional face-to face educational techniques.
- Comment on any other aspect of asynchronous learning that you think would improve its quality and the experience for students.
- What kind of support does the university provide to serve asynchronous e-learning?



## Appendix C: Statement of Informed Consent and Participants Information Sheet

HREC Project Number:	HRE2017-0085
Project Title:	Perceptions of Female ESL Students of Asynchronous Blended Learning in a Saudi University
Principal Investigator:	Professor David Treagust. School of Education
Student researcher:	Nouf Alzahrani
Version Number:	V2
Version Date:	23 November 2016

### What is the project about?

This project will address the question of what extent are blended asynchronous learning techniques effective in developing the second language skills of Saudi Arabian women.

### Who is doing the research?

This project is being conducted by Prof. David Treagust and Dr Daniel Southam, who are supervising Nouf Alzahrani as part of her PhD project. The results of this research project will be used by Nouf Alzahrani to obtain a PhD degree at Curtin University and is funded by the Cultural Mission of Saudi Arabia. There will be no costs to you and you will not be paid for participating in this project.

### Why am I being asked to take part and what will I have to do?

You are being asked to take part because you are a potential student of English department at IMSIU. You will be asked to fill a 53- items survey. By completing the survey, you will be of the participants of this study and eligible to participate in an interview related to it. The survey will not take you more than 10 minutes to complete. The interview should take no more than 30 minutes of your time and will be audio recorded and transcribed. During this interview you will be asked a series of pre-defined questions, as well as follow up questions to clarify your responses.

### Are there any benefits to being in the research project?

There may be no direct benefit to you from participating in this research. However, you may appreciate the opportunity to provide your opinions. We hope the results of this research will improve policy, contribute to the improvement of education standards, and impact positively on the learning outcomes of asynchronous blended learning in Saudi universities.

### Are there any risks, side-effects, discomforts or inconveniences from being in the research project?

There are no foreseeable risks from participating in this research project.

### **Who will have access to my information?**

The information collected in this interview will be re-identifiable (coded). This means that the stored information will be re-identifiable which means we will remove identifying information from your audio recording and subsequent transcription. Only the research team have access to the code to match your name to your interview, if it is necessary to do so. Any information we collect will be treated as confidential and used only in this project.

The following people will have access to the information we collect in this research: the research team and the Curtin University Ethics Committee. Electronic data will be password-protected and hard copy data will be in locked storage. The information we collect in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed.

You have the right to access, and request correction of, your information in accordance with relevant privacy laws.

The results of this research may be presented at conferences or published in professional journals. You will not be identified in any results that are published or presented.

### **Will you tell me the results of the research?**

We will write to you at the end of the research (in about 12-18 months) and let you know the results of the research. Results will not be individual but based on all the information we collect and review as part of the research.

### **Do I have to take part in the research project?**

Taking part in this interview is voluntary. It is your choice to take part or not. You do not have to agree if you do not want to. If you decide to take part and then change your mind, that is okay, you can withdraw from the interview. You do not have to give us a reason; just tell us that you want to stop. Please let us know you want to stop so we can make sure you are aware of any thing that needs to be done so you can withdraw safely. If you choose not to take part or start and then stop the study, it will not affect your relationship with the University, staff or colleagues. If you chose to leave the study, we will destroy any information we have collected from you during this interview.

The questionnaire is totally voluntary as well and by filling it in, you accept to participate in the study.

### **What happens next and who can I contact about the research?**

If you decide to take part in the interview and questionnaire, we will ask you to sign the consent form. By signing it is telling us that you understand what you have read and what has been discussed. Signing the consent indicates that you agree to do the questionnaire and to be in the interview and have it audio recorded and transcribed as described. Please take your time and ask any questions you have before you decide what to do. You will be given a copy of this information and the consent form to keep.

If you have any questions or would like further information about the study, please contact the researcher:

Nouf Saeed Alzahrani [n.....@postgrad.curtin.edu.au](mailto:n.....@postgrad.curtin.edu.au) (+61).....

### **Ethical Approval**

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number (HRE2017-0085). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on +61 (08) 9266 9223 or the Manager, Research Integrity on +61 (08) 9266 7093 or email [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).



# Consent Form

HREC Project Number:	HRE2017-0085
Project Title:	Perceptions of Female ESL Students of Asynchronous Blended Learning in a Saudi University
Principal Investigator:	Prof. David Treagust. School of Education
Student researcher:	Nouf Alzahrani
Version Number:	V1
Version Date:	23 November 2016

- I have read the information statement version listed above and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this project.
- I voluntarily consent to take part in this research project.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
- I understand I will receive a copy of this Information Statement and Consent Form.

## Optional Consent

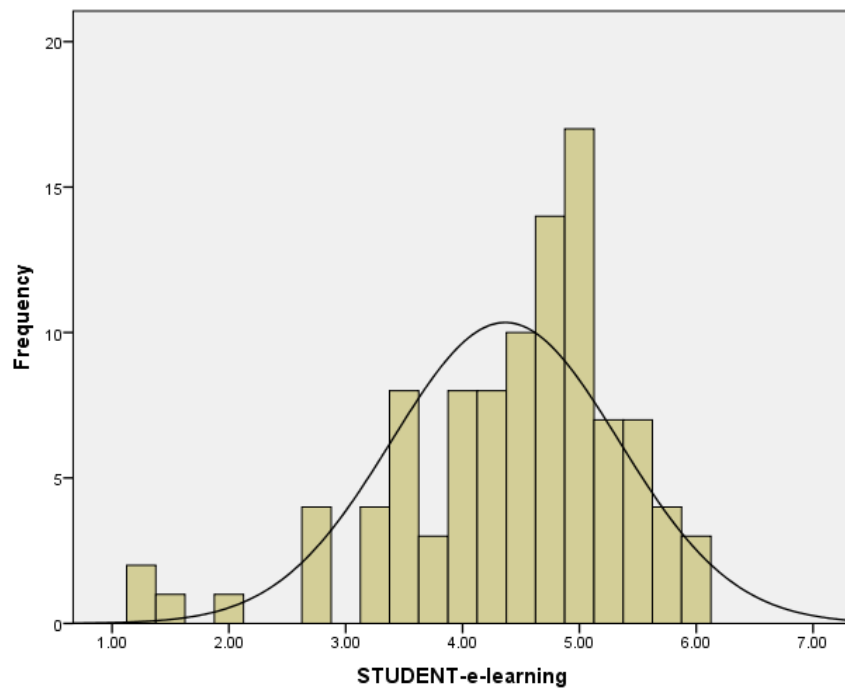
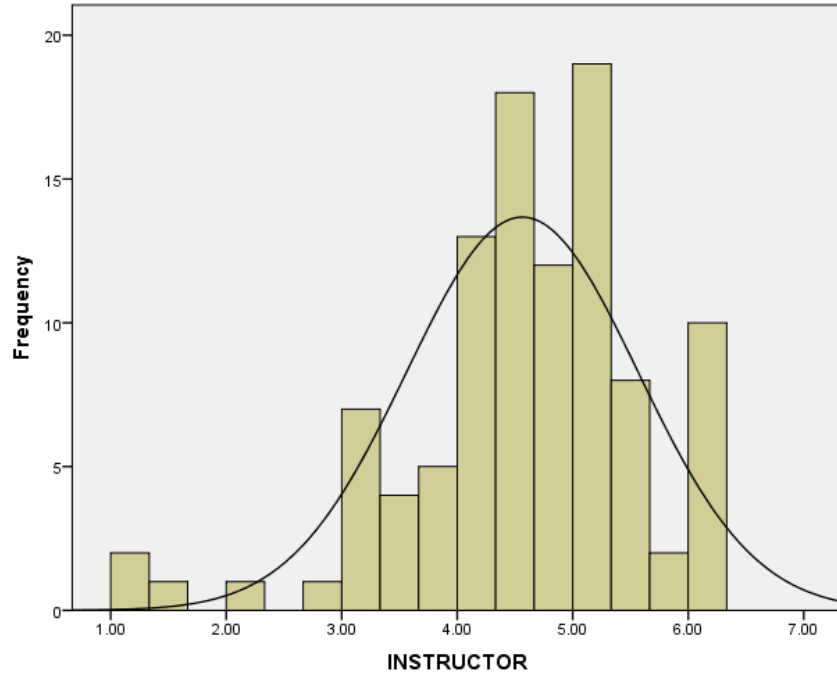
<input type="checkbox"/> I do	<input type="checkbox"/> I do not	consent to being audio-recorded and for this recording to be transcribed.
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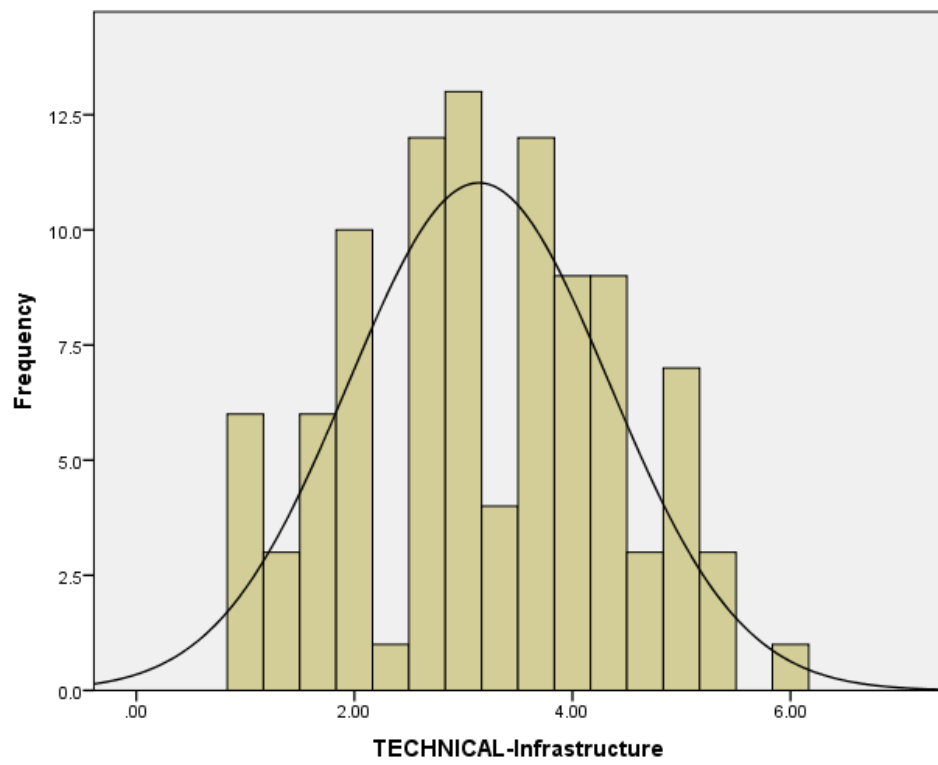
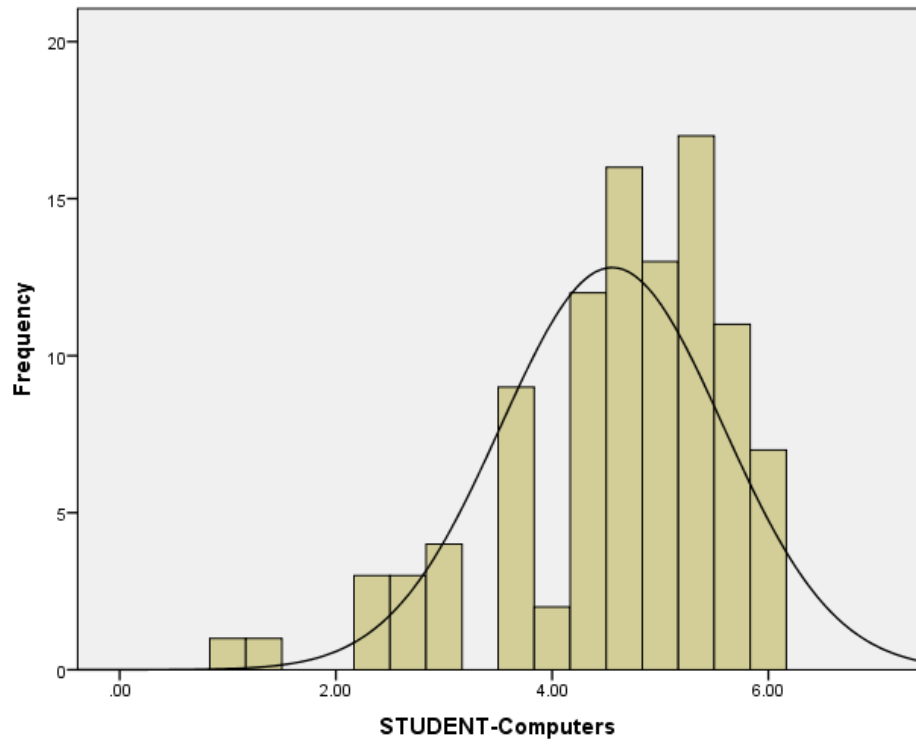
Participant Name	
Participant Signature	
Date	

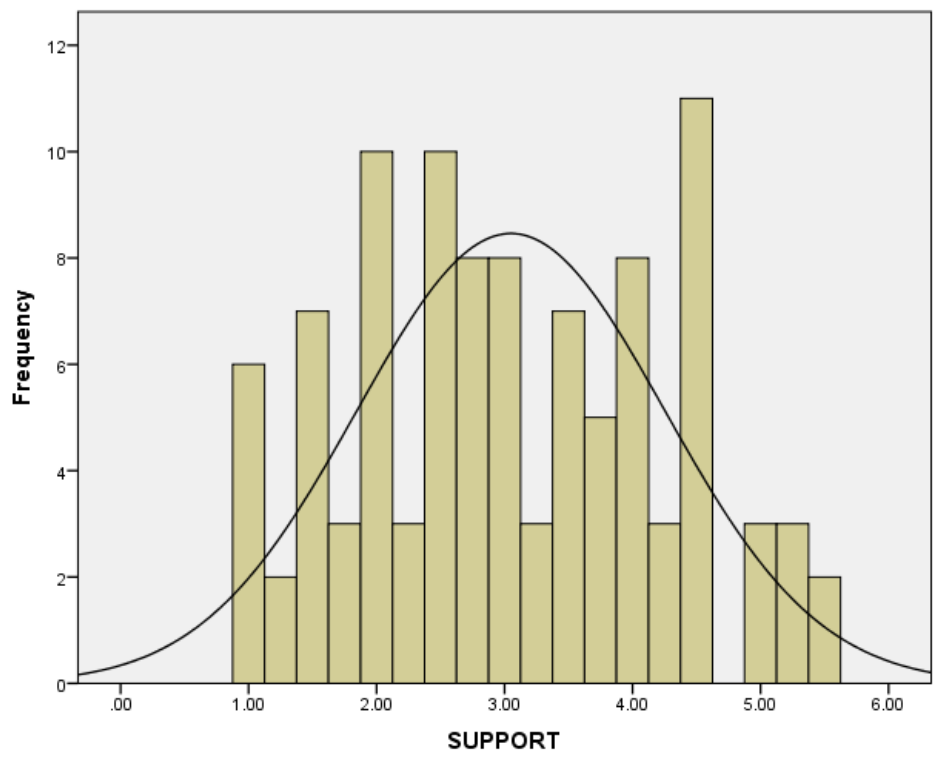
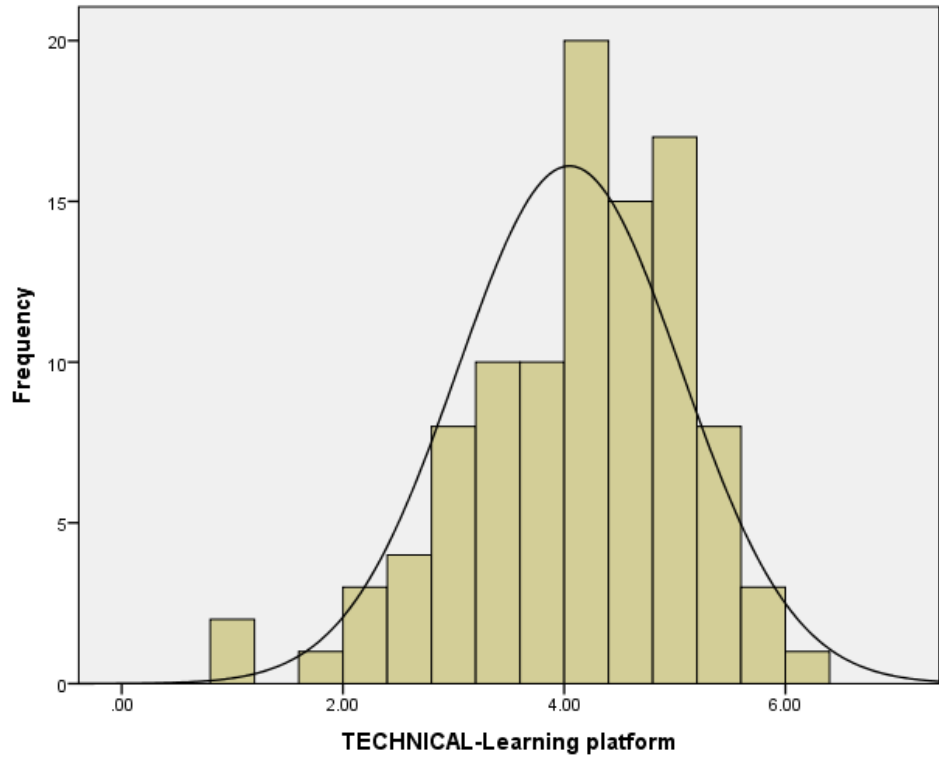
**Declaration by researcher:** I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

## Appendix D: Histogram Plots of Asynchronous E-learning Attitude Scales







# Appendix E: Screenshot of NVivo Coding and Sample Nodes

