

**AN EVALUATION OF BLENDED LEARNING IN HIGHER EDUCATION:  
A CASE STUDY ON THE KINGDOM OF SAUDI ARABIA**

**AREEJ ATTIYAH ALTOURI ALJAHNI**

A submission presented in partial fulfillment of the requirements of the University of  
South Wales/Prifysgol De Cymru for the degree of Doctor of Philosophy

**October 2014**

---

---



R11

**Certificate of Research**

This is to certify that, except where specific reference is made, the work described in this thesis is the result of the candidate’s research. Neither this thesis, nor any part of it, has been presented, or is currently submitted, in candidature for any degree at any other University.

Signed .....  
Candidate

Date .....

Signed .....  
Director of Studies

Date .....

## **ABSTRACT**

The socioeconomic, demographic, cultural and religious context of Arab region is distinctive in comparison to rest of the world. Gender segregation and restriction of direct communication between men and women form the basis of several limitations for learning and access to resources. Blended Learning (BL), in this context provides for an interesting research problem.

Over the last decade, the Kingdom of Saudi Arabia (KSA) has invested significantly in education sector, exclusively on Distance/online Education based universities such as the Saudi Electronic University and the Knowledge International University. Our research is set in this context and broadly aims to assess the current status of BL in KSA and to identify the obstacles and challenges encountered at universities when implementing BL. The perceptions of the students and faculty who participate in BL form the basis of the assessment. The research is conducted by way of a survey of students and faculty from HEI in KSA. Some experts also participate in the survey. An instrument, termed Blended Learning Evaluation Instrument (BLEI) is developed and deployed for purposes of assessing BL components.

The study indicates that BL adoption faces some obstacles in the KSA context and surprisingly, not gender-related! The eco-system necessary for BL is not completely in place. Tight coupling of face-to-face and online content necessary for BL is not in place. There is a clear indication of lack of training for both staff and students in using the Internet and LMS technologies and therefore the tightly couple content. Internet illiteracy is still a problem to increase enrolment.

Both men and women express the need for BL and women find this mode of learning very convenient. Based on the study, a few recommendations are drafted. These recommendations are potential inputs for policy makers in the government of KSA. Similarly, there are valuable inputs for educators, university management and course designers to lay out strategy for BL implementation. It could also serve to provide useful inputs to the other countries in the Arab region, given that they have a similar cultural background and a fairly similar socio-economic ethos.

## **ACKNOWLEDGEMENTS**

First and foremost, all praises and thanks are extended to Allah the Lord, the Creator, the Sovereign, the Holy One, the Source of Peace and Perfection, the Guardian of Faith, the Preserver of Safety, the Exalted in Might. I thank him for his blessings and for helping me to complete this work, for providing me with this opportunity and granting me the capability to proceed successfully. His many blessings have made me who I am today.

I would also like to extend my gratitude for my wonderful parents, my mother Shamsiyah Basri and my father Lieutenant General Attiyah Altouri Aljohani, who have supported me throughout my academic trajectory. Thank you for your patience, prayers and on-going love, for your caring and sacrifices in educating me and preparing me for my future. Thank you for believing in me and encouraging me to do my best. It is because of you that I love myself and I am proud of myself, have confidence and believe in myself. May Allah give you strength, good health and a happy life.

I am grateful to and have the deepest appreciation for my soul mate, my husband the Lieutenant Colonel Eng. Abdulkareem Aljohani, for his love, understanding, prayers and continuing support to complete this research work. Thank you for supporting my dreams and ideas, even when they seemed far-fetched; thanks for being there when I was down, and for helping me to find my way back up. I want to thank you from the bottom of my heart for your help. Without your support and encouragement, I could not have finished this work. It was you who supported our family, and I understand it was difficult for you. Therefore, I just say thanks for everything and may Allah give you all the best.

To my sweet daughter, Daliya, and my sons Khalid, Abdulaziz and Abdulmalik, I want to express my love, gratitude and deepest appreciation. You showed endless confidence, encouragement and great patience and understanding as I completed this research work. Thank you.

I would also like to thank to my sisters, Prof. Hanan, Huda and Maiy for their support. Likewise, I thank my brothers, Colonel Abdulaziz, Eng. Abdulrahaman, Lieutenant Colonel Mohammed and Abdulhameed for their keen interest in my successful completion of this thesis. My special thanks go to my brother in law, Dr Abdullah Aljohani, for his support.

I have the deepest appreciation and gratitude for my director of study, Professor Khalid Al-Begain, who has consistently inspired me in this study and provided me with insightful suggestions and advice. His wonderful and unforgettable kindness, generosity, interest and care for my welfare have given me the strength to write this thesis. My sincere appreciation also goes to my advisor, Dr Heather Skinner. Without her attentive guidance, endless patience and encouragement through the past four years, it would not have been possible to complete this thesis.

I am grateful for the financial support of the Saudi Ministry of Higher Education. Special thanks are also extended to the Saudi Arabian Cultural Bureau in London.

Finally, it would never have been possible to complete this research without the cooperation of different organisations and universities in Saudi Arabia. I will never be able to express my gratitude sufficiently to all the university presidents, deans, staff and students from all participating universities who responded to the study questionnaires and provided me with valuable data.

## Table of Contents

<b>Certificate of Research .....</b>	<b>I</b>
<b>ABSTRACT .....</b>	<b>II</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>III</b>
<b>Table of Contents.....</b>	<b>V</b>
<b>LIST OF TABLES .....</b>	<b>VIII</b>
<b>LIST OF FIGURES.....</b>	<b>X</b>
<b>APPENDICES .....</b>	<b>XI</b>
<b>CHAPTER 1: INTRODUCTION .....</b>	<b>1</b>
<b>1.1. BACKGROUND.....</b>	<b>1</b>
<b>1.2. BLENDED LEARNING – IN THE UK, USA AND KSA.....</b>	<b>5</b>
<b>1.3. WHAT IS BLENDED LEARNING? .....</b>	<b>12</b>
<b>1.4. RATIONALE FOR THE STUDY.....</b>	<b>16</b>
<b>1.5. RELEVANCE TO THE STUDY OF INFORMATION AND COMMUNICATION     TECHNOLOGY INFRASTRUCTURE IN THE KINGDOM OF SAUDI ARABIA.....</b>	<b>18</b>
1.6.1. Aim of the study.....	19
1.6.2. Objectives of the study .....	21
<b>1.7. SIGNIFICANCE OF THE STUDY .....</b>	<b>21</b>
1.7.1. Contribution to the literature.....	21
1.7.2. Theoretical contribution .....	22
1.7.3. Contribution to practice .....	27
<b>1.8. OVERVIEW OF THE METHODOLOGY .....</b>	<b>28</b>
<b>1.9. LIMITATIONS OF THE STUDY .....</b>	<b>29</b>
<b>CHAPTER 2: LITERATURE REVIEW.....</b>	<b>32</b>
<b>2.1. INTRODUCTION .....</b>	<b>32</b>
<b>2.2. LEARNING THEORIES AND BLENDED LEARNING .....</b>	<b>37</b>
<b>2.3. BLENDED LEARNING IN HIGHER EDUCATION ENVIRONMENT .....</b>	<b>39</b>
<b>2.3. ADVANTAGES AND DISADVANTAGES OF PURE ONLINE AND BLENDED LEARNING .</b>	<b>44</b>
<b>2.4. THE INFORMATION AND COMMUNICATIONS TECHNOLOGY INFRASTRUCTURE OF     BLENDED LEARNING IN HIGHER EDUCATION.....</b>	<b>49</b>
<b>2.5. E-INFRASTRUCTURES .....</b>	<b>51</b>
<b>2.6. GLOBAL TRENDS IN BLENDED LEARNING – RELATED WORK .....</b>	<b>52</b>
<b>2.7. ENCOURAGING EFFECTIVE BLENDED LEARNING – THE ARAB CONTEXT.....</b>	<b>57</b>
2.7.1. The United Arab Emirates.....	61
2.7.2. The Kingdom of Jordan .....	61
2.7.3DS. The Saudi Arabian Context .....	62
<b>2.8. THE DEVELOPMENT OF E-LEARNING AND DISTANCE EDUCATION IN THE KINGDOM     OF SAUDI ARABIA .....</b>	<b>64</b>
<b>2.9. SUMMARY .....</b>	<b>74</b>
<b>2.10. CONCLUSION .....</b>	<b>80</b>
<b>CHAPTER 3: METHODOLOGY .....</b>	<b>83</b>
<b>3.1. AIMS AND OBJECTIVES .....</b>	<b>83</b>
<b>3.2. RESEARCH QUESTIONS .....</b>	<b>84</b>
<b>3.3.1 METHODS OF DATA COLLECTION .....</b>	<b>87</b>
Why Were Triangulation Methods Used in This Study?.....	88
<b>3.4. SAMPLING APPROACH.....</b>	<b>89</b>

3.4.1. Sampling Techniques .....	89
<b>3.5. DEVELOPMENT AND VALIDATION OF THE BLENDED LEARNING ENVIRONMENT INSTRUMENT IN HIGHER EDUCATION .....</b>	<b>90</b>
3.5.1 Why a New Instrument? .....	90
<b>3.6. THE INFRASTRUCTURE ASPECT.....</b>	<b>93</b>
<b>3.7. THE COMPLETED BLEI .....</b>	<b>94</b>
<b>3.8. STUDENT DATA ANALYSIS.....</b>	<b>96</b>
<b>3.9. ANALYSIS OF DATA FROM STAFF.....</b>	<b>98</b>
<b>3.10. CONCLUSION .....</b>	<b>99</b>
<b>CHAPTER 4: FINDINGS.....</b>	<b>101</b>
<b>4.1. INTRODUCTION .....</b>	<b>101</b>
<b>4.2. STUDENTS' RESPONSES.....</b>	<b>101</b>
4.2.1 Demographic Data .....	101
<b>4.3. OVERALL RESULTS FOR ALL ASPECTS OF BLEI .....</b>	<b>103</b>
4.3.1. Access .....	103
4.3.2. Interaction .....	107
4.3.3. Response.....	109
4.3.4. Result .....	111
4.3.5. Infrastructure.....	113
<b>4.4. THE IMPACT OF GENDER, LEVEL OF STUDY AND SUBJECT AREA ON THE ASPECTS OF BLEI .....</b>	<b>116</b>
<b>4.5. Gender Impact .....</b>	<b>117</b>
<b>4.6. STAFF AND EXPERT RESPONSES .....</b>	<b>122</b>
4.6.1. Staff Demographic Data.....	123
4.6.2. Overall Results for All Aspects in the Staff Survey.....	127
<b>4.7. STAFF COMMENTS .....</b>	<b>142</b>
<b>4.8. SUMMARY .....</b>	<b>145</b>
<b>CHAPTER 5: DISCUSSION.....</b>	<b>147</b>
<b>5.1. INTRODUCTION .....</b>	<b>147</b>
<b>5.2. SUMMARY OF ANALYSIS OF STUDENTS' QUANTITATIVE AND QUALITATIVE DATA .....</b>	<b>147</b>
5.2.1. Access .....	147
5.2.2. Interaction .....	150
5.2.3. Response.....	152
5.2.4. Result .....	153
5.2.5. Infrastructure.....	156
<b>5.3. SUMMARY OF ANALYSIS OF STAFF AND EDUCATION EXPERTS' RESPONSES .....</b>	<b>158</b>
5.3.1. Four aspects of the quantitative Results .....	158
5.3.2. Staff qualitative responses .....	164
<b>5.4. PERSONAL REFLECTION ON DATA ANALYSIS AND METHODOLOGY .....</b>	<b>164</b>
<b>5.5. ETHICAL ASPECTS OF RESEARCH.....</b>	<b>166</b>
<b>5.6. CONCLUSION.....</b>	<b>166</b>
<b>CHAPTER 6: CONCLUSION .....</b>	<b>168</b>
<b>6.1. INTRODUCTION .....</b>	<b>168</b>
<b>6.2. MAIN FINDINGS OF THE THESIS.....</b>	<b>171</b>
6.2.1. Research Question 1: Based on the perspectives of students, staff and HEI experts, what is the impact of LMSs on the learning environment within universities in Saudi Arabia? .....	171
6.2.2. Research Question 2: How effective is the current blended learning environment in the HEIs in facilitating collaborative learning? .....	174

6.2.3. Research Question 3: Do the students, staff and experts experience a positive feeling, a sense of achievement and satisfaction with their BL environment?.....	175
6.2.4. Research Question 4: Does the implementation of technology-based teaching and learning methods harm the learning environment goals and objectives in any way? .....	176
6.2.5. Research Question 5: Do the students, staff and experts perceive blended learning infrastructure as an enabler to achieve the learning objectives? .....	177
6.2.6. Research Question 6: What support for BL is currently available in KSA? .....	178
<b>6.3. IMPLICATIONS OF THIS STUDY .....</b>	<b>178</b>
6.3.1. Contribution to the literature.....	178
6.3.2. Contribution to theory.....	180
6.3.3. Contribution to practice .....	181
<b>6.4. Personal Reflection.....</b>	<b>181</b>
<b>6.5. RECOMMENDATIONS .....</b>	<b>184</b>
<b>6.6. FUTURE PROSPECTS FOR THIS RESEARCH .....</b>	<b>186</b>
<b>6.7. SUMMARY AND CONCLUDING REMARKS .....</b>	<b>188</b>
<b>REFERENCES .....</b>	<b>191</b>
<b>APPENDICES .....</b>	<b>210</b>
<b>APPENDIX A: The Blended Learning Environment Instrument (BLEI) .....</b>	<b>210</b>
<b>APPENDIX B: Survey for Saudi Arabian University Staff and Higher Education Experts.....</b>	<b>219</b>



## LIST OF TABLES

<b>Table</b>	<b>Page</b>
Table 2.1 ICT Challenges and Obstacles in Arab Nations.....	75
Table 2.2 The Current ICT Infrastructure – A Comparison Between Arab and Western Nations.....	76-80
Table 3.1 BLEI Likert Scale Response Options.....	95
Table 3.2 Internal Consistency of the BLEI.....	97
Table 3.3 Mean Score Values, Standard Deviations and Correlation Coefficients.....	97
Table 3.4 Staff Survey – Internal Consistency.....	98
Table 4.1 Distributions of Respondents Across KSA Universities (Students).....	102
Table 4.2 Distributions of Respondents Across Subject Areas.....	103
Table 4.3 Results for the First Aspect of BLEI (Access).....	104
Table 4.4 Results for LMS Functions Students Can Use.....	105
Table 4.5 Results for the Second Aspect of BLEI (Interaction).....	107
Table 4.6 Results for the Third Aspect of BLEI (Response).....	109
Table 4.7 Results for the Fourth Aspect of BLEI (Result).....	111-112
Table 4.8 Results for the Fifth Aspect of BLEI (Infrastructure).....	113-114
Table 4.9 Results for Interactive Classroom Contents.....	115
Table 4.10 Gender Impact on the BLEI.....	118
Table 4.11 Distribution of Respondents Across KSA Universities (Staff and Experts).....	124
Table 4.12 Distribution of Respondents Across Occupations.....	125
Table 4.13 Distribution of Respondents Across Academic Levels.....	125
Table 4.14 Distribution of Respondents Across Experience.....	126
Table 4.15 Distribution of Respondents Across Utilisation of BLEI.....	126

<b>Table</b>	<b>Page</b>
Table 4.16 Distribution of Respondents Across Number of Years Using BLEI.....	127
Table 4.17 Results for the BL Environment (Staff And Experts).....	129- 130
Table 4.18 The Necessary Elements, which Must Be Provided by Universities for BLEI.....	132
Table 4.19 Results for LCMS and LMS Functions Staff Can Use.....	134
Table 4.20 Results for LCMS Functions Staff Can Use.....	135
Table 4.21 Results for Digital Content Staff Can Use.....	135
Table 4.22 Results for Course Information Functions Staff Can Use Through the LMS.....	136
Table 4.23 Results for Course Communication Functions Staff Can Use Through the LMS.....	136
Table 4.24 Results for Test and Assessment Functions Staff Can Use Through the LMS.....	137
Table 4.25 Results for LMS Functions Staff Can Use Through a PC.....	137
Table 4.26 Results for More Functions Staff Can Use Through the LMS.....	138
Table 4.27 Results for Infrastructure (Staff and Experts).....	138- 139
Table 4.28 Results for Wired Internet Connections.....	140
Table 4.29 Results for Interactive Classroom Content Which Staff Use.....	140
Table 4.30 Results for the Tools Staff Use in the BLEI.....	140
Table 4.31 Results for Technologies Staff Use in the BLEI.....	141
Table 4.32 Results for Obstacles to the Adoption of BL (Staff And Experts).....	141
Table 4.33 Staff Engagement With BL.....	143

## LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
Figure 1.1 Spending for Key Public Sector Areas in KSA.....	11
Figure 2.1 Publication Trends Regarding BL.....	41
Figure 2.2 Publication Trends Regarding Hybrid Learning.....	41
Figure 2.3 The Continuum of BL.....	42
Figure 4.1 Ratio of Female to Male Respondents (Students).....	102
Figure 4.2 Students' Comments (Access).....	105
Figure 4.3 Students' Comments (Interaction).....	108
Figure 4.4 Students' Comments (Response).....	110
Figure 4.5 Students' Comments (Result).....	112
Figure 4.6 Students' Comments (Infrastructure).....	115
Figure 4.7 The Impact of Gender, Level of Study and Subject Area on BLEI.....	116
Figure 4.8 Sample Comments from Student Respondents.....	121
Figure 4.9 Female vs. Male Respondents (Staff and Experts).....	123
Figure 6.1 Elements of Effective BL.....	189

## APPENDICES

<b>Appendix</b>		<b>Page</b>
Appendix A	The Blended Learning Environment Instrument (BLEI).....	210
Appendix B	Survey for Saudi Arabia University Staff and Higher Education Experts.....	219

## **CHAPTER 1: INTRODUCTION**

### **1.1. BACKGROUND**

For over a century and a half Distance Education, as a means of extending education beyond the classroom, has existed, evolved and adapted to the forms of media available for delivery. Sir Isaac Pitman founded correspondence colleges in the UK in the 1840s, taking advantage of the then free rural mail delivery to students. Similarly, William Rainey Harper in the USA, around the same time pioneered distance education and started the first university distance education programme at the University of Chicago. The media was print and delivery was via post, but the teacher-student interaction was one-way. (Sherron & Boettcher, 1997) have illustrated the various aspects of distance learning – its evolution in terms of “generations”, the content delivery mechanisms, the interaction and how it has grown until the end of the last century.

The establishment of the British Open University (1969) marked a significant development in the delivery of distance education by offering a mixed-media approach to distance learning technologies. Learning materials (text, audio & visuals) were sent to students by mail and supplemented by broadcast radio and television (Matthews, 1999). Similar effort in the USA was the Walden University, followed by the University of Iowa.

Understanding Distance learning, its origins and its evolution are central to the theme of Blended Learning (BL). We believe that BL has a lot to borrow from the rich experiences of Distance Education, as it evolves. Distance Education always addressed remote audiences and evolved means of enhancing content delivery and student teacher interaction. Our context addresses audiences who prefer to stay remote because of the online interaction content availability and there are other terms that have evolved in the meantime, such as online learning and hybrid learning. We believe that all these terms seem to be converging to something similar and discuss it in brief detail in the course of this chapter.

Over the last couple of decades, Information and Communication Technologies (ICT) in general and specifically the proliferation of the Internet have had an impact on every aspect of life. It is, in that sense an intrusive innovation that has driven change across all sectors of the market and education is no exception. The technologies enable information exchange across a wide variety of computing devices that are capable of communicating anywhere.

These innovations in ICT have resulted in changing the means and mode of communication between people. Communication is almost instantaneous. The message could either be textual, audio or visual or a combination of these (E.g. An audio visual annotated with text). The devices used for such communication are generally hand held devices and all communications applications have their content and user interfaces adapted to the features of such devices – form factor, display size, processing power and storage resources. With the increasing number of millennial reaching the threshold of higher education, the delivery of education as a service and its content has no choice but to match the new mode and means of information exchange.

The impact of ICT and the Internet in Education has seen the emergence of e-learning and online learning which lend them well to distance learning. The adoption of technology was seen as an increased cost with no significant gain/impact. However, a study following a program in Course Redesign by the Centre for Academic Transformation at Rensselaer Polytechnic Institute Technology illustrated a 40% average saving as well as an increased course completion and student satisfaction (Twigg 2003). Overall, BL has been successful with the students as well as faculty. BL courses resulted in superior success and lower withdrawal rates when compared to face-to-face and online courses and that student satisfaction levels were highest for this format (Norberg et al 2011). Faculty members reported high levels of satisfaction with their blended teaching and that the amount and quality of their interaction with students surpassed what they experienced in their face-to-face courses (Dziuban

et al 2011a). However, there are a few specific survey based studies focussing on student skills acquired, with and without supplementing the traditional learning, that do not find any significant differences upon comparison (Alotaibi 2013, Li 2014).

While e-learning took on a supplementary role to traditional learning, online learning played a pivotal role in distance education. It has further evolved in a manner that online learning now subsumes e-learning and online learning plays a complementary role to traditional learning. This marked the emergence of Blended Learning (BL) as it is known today. BL combines various aspects of e-learning and traditional classroom learning. E-learning tools are part of classroom learning and provide the mixed experience of face-to-face (f2f) and online learning. This requires a remodelling the design of education delivery over an information technology framework (Garrison and Vaughan 2008).

Despite the prolific use of the term Blended Learning, an agreement on its definition seems elusive (Torrissi-Steele 2011). BL is the on-going convergence between the traditional face-to-face learning environments and distributed online learning enabled by technology (Graham 2006). In the past, the two learning environments (termed class room learning and distance learning) were separate, since they used different media and methods of communication and addressed the needs of different audiences. While traditional learning occurs in a live one-to-one, synchronous manner, distributed online learning is asynchronous in nature and emphasises self-paced learning.

Torrissi-Steele (2011) examines the definitions of BL in literature and points out that the broad definitions of BL seem to term any teaching endeavour as BL. Commonly, they suggest that BL is a combination of f2f and technologies where the term technologies is, at times specified as e-learning. A few such definitions include the volume of course content delivered online and indicate 30 – 79% as the range for BL. These definitions emphasise the combination of f2f and technology and do not include any pedagogical impact. The better definitions of BL are those with some pedagogical considerations such as technology mediated

interaction between students, the teachers and learning resources (Bliuc et al 2007).

This growth of online/e-learning is compelling educators to change their ideas and assumptions about current teaching and learning practices in higher education (HE). Policymakers and leaders of HE are challenged to meet the demands for higher quality learning experiences and outcomes. The main objective for BL is to integrate face-to-face and technology-mediated interaction to provide students with an interactive learning experience, which is flexible and convenient to them.

The most important issue addressed by BL studies is its effectiveness as a means for learning. A study by Marsh (2012) demonstrated solutions in creating the most effective teaching and learning have always involved the use of different methods, approaches and strategies to maximise knowledge acquisition and skills development (Marsh 2012, p.3). This reinforces the views of Dzubian, Hartman and Moskal (2004) who suggest that blended learning should have a pedagogical approach and requires a fundamental redesign of the instructional model. They have illustrated it with live data in Moskal et al, 2013.

The first few models for BL in HE were a result of a study of a course redesign initiated by the National Centre for Academic Transformation (NCAT) in the US and funded by the Pew Charitable Trust. Carol Twigg pioneered this effort and the study demonstrated both financial savings as well as increased quality of delivery. Thirty HE institutions participated in this study of which 26 used BL and 4 used online learning. This was, quite literally, a boot strap for BL efforts (Twigg 2003). In recent years, there has been an increasing interest in BL, given its application potential in areas of generic learning and not necessarily formal HE. BL is a proposition that has gotten sufficient traction, given the large number of country-wise studies in literature. Adoption of BL and transitioning to BL is an emerging trend in the knowledge delivery industry (Graham 2006), with the focus on HE and the training industry (Dziuban 2011; Graham & Dziuban 2008; Graham, Spring & Drysdal 2012; Halverson *et al.* 2012, p.270; Spector 2008). BL



is expected to be predominant in the future. In higher education, the use of BL has grown rapidly, and is predicted to become the “new traditional model” (Graham 2013) or the “new normal” in course delivery (Norberg et al, 2011).

## 1.2. BLENDED LEARNING – IN THE UK, USA AND KSA

Blended learning does not aim to provide merely traditional learning experience on a technological platform. It is not just about offering increased access to learning, but also largely about rethinking and redesigning the teaching and learning relationship. Marshall McLuhan’s work indicated that BL is not about delivering old content with a new medium; instead, it reflects on how to design and deliver HE learning. BL offers possibilities to create transformative environments that can effectively facilitate critical, creative and complex thinking skills.

There is evidence that BL has the potential to be more effective and efficient when compared to a traditional classroom model (Heterick & Twigg 2003), as students achieve as well, or better, on exams and are satisfied with the approach. Other outcomes achieved by the redesigns include increased course completion rates, improved retention, better student attitudes toward the subject matter and increased student satisfaction with the mode of instruction compared to traditional formats (Heterick & Twigg 2003). However, BL brings with it enormous challenges along with the potential that it offers.

In this context, several studies have focused on examining the perceptions of the BL environment amongst students and staff in order to offer inputs to educators, course designers and other experts. A literature survey suggests that even when universities have set strategies for BL, it is likely that they will not take into account all factors affecting its impact. This may lead to universities losing sight of the overall learning environment.

The blend of the f2f and online component of interaction is one of the key factors. In this context, it is appropriate to delve into the student engagement

requirements, workloads and credits for qualifications such as degrees and diplomas. In Europe, the European Credit Transfer System (ECTS) is the credit system used in the European Higher Education Area (EHEA) that has 47 country signatories. ECTS credits are based on the workload students need in order to achieve expected learning outcomes. Learning outcomes describe what a learner is expected to know, understand and be able to do after successful completion of a process of learning. Workload indicates the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations) required to achieve the expected learning outcomes. Sixty (60) ECTS credits are awarded to an academic year's workload (full time, formal learning for a year) and the associated outcomes (ECTS 2009).

The estimation of workload is not based merely on contact hours only (i.e. hours spent by students on activities guided by teaching staff). It encompasses all the learning activities required to achieve the expected learning outcomes, including the time spent on independent work, preparation for assessment, the time necessary for the assessment and compulsory work placements,. The workload varies between 1500 to 1800 hours for an academic year with 25 to 30 hours of work. Credits vary with the Bologna Cycles of qualification they are associated with – 180 to 240 credits (5400 – 7200 hours, corresponding to 3 year and 4 year courses) for Cycle 1 and 90 – 120 credits (1.5 to 2 year courses) for Cycle 2. While most other countries have 25 to 30 hours per credit, the UK and Ireland have 20 hours per credit (ECTS 2009).

In practice, it is not always easy to demonstrate from the actual time students spend studying, whether on campus, online or in their own self-directed study time. Undergraduate students in their first and second years have an average of 14.2 contact hours per week during term time and complete another 14.3 hours of private study, in addition. However, other study hours, including time spent on placement, increases the total for all full-time undergraduates to 33.9 hours (HEPI 2014).

A Bachelor's degree (Honours) in the UK requires 360 credits and lasts three years. A Master's degree requires 480 credits. In the USA, a Bachelor's degree

requires 120 credits (Johnson 2012). Each course is 3 credit hours on an average and a full time student is expected to take a minimum of 12 (20 maximum) credit hours per semester. A course, therefore, amounts to  $(15 * 3)$  45 contact hours over a 15 week semester. So, at 30 weeks across 2 semesters, and 5 courses each semester, the total credit hours per year will be 450.

In contrast, in the Kingdom of Saudi Arabia (KSA), at the University of Dammam (UD), students must complete a minimum total of 122 credit hours (UD 2013), whereas the students in the Bachelor of Science Programme in IT at King Saud University (KSU) need a minimum total of 131 credit hours to graduate (KSU 2013). Thus, credits, learning hours and the balance between formal scheduled teaching activities (campus-based, online or a mix of the two) and self-directed study are not necessarily equitable, even within the same country. However, it can also be seen that wherever they study, students are required to put in many learning hours in order to achieve these credits. It is important for universities to ensure that the students are positive and derive a good learning experience from their learning environments – physical or virtual and online.

The purpose of any educational tool should be more than delivering content and achieving formal assessment outcomes; rather, such a tool needs to create a learning environment that maintains stimulus, encourages self-initiation and promotes cooperation. The evolution of learning aids and tools is evident in the annual survey reports of the Campus Computing Project in the USA. It begins with technology in the classroom in terms of learning materials on CD-ROMs termed Computer Aided Instruction, followed by access to emails, the Internet and on to the World Wide Web. Across the reports from 1992 to 2000, they are marked under “Rising use of Technology in Instruction”. The first mention of a Course Management System (CMS) is in the year 2000 survey report, where 14.7 % of the respondents had a Course Management System in place and about 60 % of the respondents had established a product standard for CMS. The year 2001 report indicates that about 74% were ready with a product standard. 50% to 60 % of the public and private universities were ready with a product standard

whereas 20 to 30% of them had a CMS in use. Thereafter, there is no specific mention of CMS, implying that CMS became main stream after 2001.

In the UK, the Universities and Colleges Information Systems Association (UCISA), supported by the Joint Information Systems Committee (JISC) survey the Virtual Learning Environments (VLE) in UK HE. VLE, for purposes of the survey is defined as learning management systems that synthesise the functionality of computer-mediated communications and on-line methods of delivering course materials. The first of the surveys that mentions technology in learning is from 1999 when the survey was conducted to assess the role of Computing/Information Services in Learning and Teaching Technology (LaTT) support. Although Integration of existing courseware into learning and teaching and development of new courseware are indicated as supported activities, the report does not specifically mention LMS or VLE. The 2001 survey mentions that the current use of VLEs is widespread within the UCISA constituency. 81% had a VLE in use, 24% using two and 25% using three. The student use of VLE was large (15% of the institutions, each with 5000+ and between 3000 – 5000 students using VLE). Faculty use was also reported high. The report also mentions that in between 1997 and 2000, only 7% reported the use of a VLE but between 2000 and 2001 there were 40% that reported the use of VLE (UCISA 2001). So, VLE deployments began in 1997 and became main stream in 2001. By 2003, the usage of VLE by staff and students had increased as a consequence of VLEs being used across all subjects. The usage was supplementary to the course. The primary driver for use was enhancement to learning and teaching. Access to course material continued to account for the greatest VLE usage in 2005, but 41% reported using VLEs being used for online learning.

It is interesting to note the evolution of terms in the UCISA reports. The 2008 survey report mentions:

“It is fascinating to note how the language has changed for the activities that the Surveys attempted to capture between 2001 and 2008. In 2001 the UCISA Survey focused exclusively on asking questions concerning VLEs. By 2003 the UCISA/JISC Survey had a much broader remit. It explored MLEs, as defined

by JISC of which VLEs were (merely) regarded as a component. In 2005, the vocabulary had moved away from the poorly understood term MLE to the more widely accepted term *e-learning*. By 2008, there had been yet another semantic shift towards phraseology that attempted to capture more explicitly the enhancing role of technology upon learning, with the term *Technology Enhanced Learning* (TEL) gaining increasing currency.”

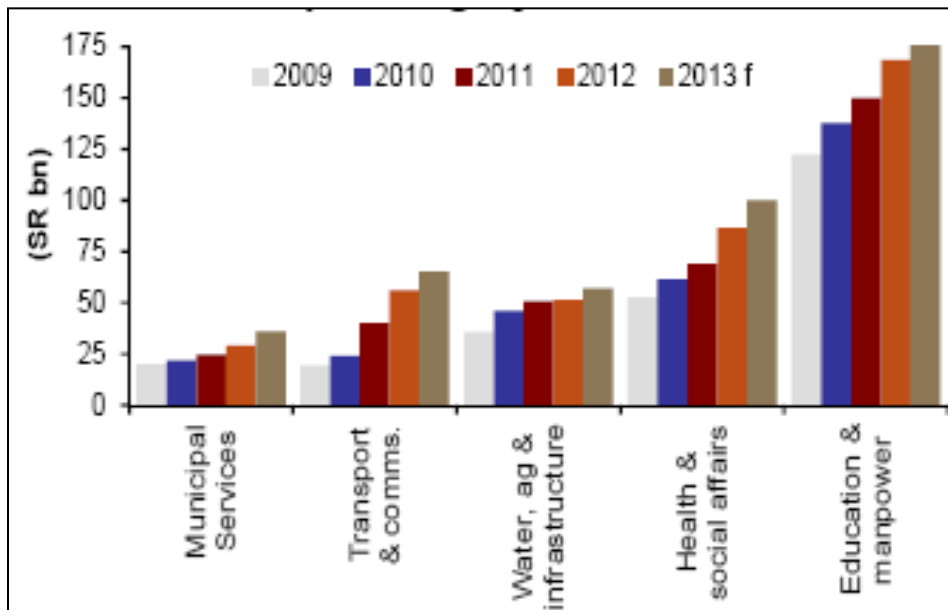
eLearning was on the UK government’s agenda by 2005 and the Higher Education Funding Council for England (HEFCE) invited the Higher Education Academy to lead an e-Learning benchmarking and Pathfinder programme in partnership with JISC, following the publication of its ten year e-learning strategy in march 2005. The benchmarking exercise was intended to help institutions establish where they were in regard to embedding e-learning. The Pathfinder programme, by contrast, was specifically designed to help selected institutions, on behalf of the sector, identify, implement and evaluate different approaches to the embedding of technology-enhanced learning in ways that result in positive institutional change (HEA 2008). Five benchmarking methods were identified, namely, ELTI (Embedding Learning Technologies Institutionally), eMM (e-Learning Maturity Model), MIT90s, OBHE/ACU (Observatory for Borderless Higher Education/Association of Commonwealth Universities) and Pick & Mix.

In the last decade, the need for flexible tools able to support well-planned hybrid learning scenarios has emerged. One of the research objectives is to determine whether LMSs such as Moodle, Tadarus, BlackBoard, ATutor, JUSUR and WebCT used in university programmes and courses have really improved the learning environments from HE students’, staff members’ and experts’ perspectives. KSA is not isolated from this process. In recent years, Saudi Arabia has engaged with extensive development in the use of advanced educational technology, facilitated at least in part by the education budget in this country, which is the largest in the Middle East (Aljahni, Obayya & Skinner 2010).

The formal and organized system of education in Saudi Arabia started in 1925. Since the beginning, the educational system has been a centralized, gender-

segregated, free, and has state financial support. Education is controlled by the Ministry of Education (MoE), Ministry of Higher Education (MoHE), and the Technical and Vocational Training Corporation (TVTC) (Manal AlMarwani 2013). The National Centre for E-Learning and Distance Learning embodies the Kingdom's outlook and strategy for the horizons of the promising future of education, for it constitutes the cornerstone and main support for the realm of electronic learning. There are 24 public universities and 8 private universities. The 24 public universities account for 669271 enrolments of which 10.4% are external registrants and the rest are regular. 63% are women and 37% are men (MOHE 2013). An earlier report from 2009 indicates the total number of enrolments in HE in public and private, universities and colleges as 728867 (MOHE 2010). In 2010, the total enrolments were 903567 indicating a 24% growth rate (MOHE 2011). Similar numbers from 2011 to 2013 are not available.

The importance of education to the Saudi government is reflected in the budget allocation. In December 2012, the government announced its annual budget for 2013, where about \$221 billion was allotted for government spending as a whole. This was the largest budget in the Kingdom's history, representing a 21% increase over the 2012 allocation, as well as the highest increase since 2007 (Jadwa Investment, 2013). Education and health care represented the centre of attention of Saudi government spending, accounting for 37% of total spending. Education received the biggest share in the budget, at 25% of total spending, followed by health and social affairs, with 12.2%. The HE allocation included \$3.6 billion for the Saudi Electronic University. Further, an estimated \$1.1 billion was allocated to build three new college hospitals, in addition to 15 new colleges and further work to be undertaken on the construction of facilities at newly opened universities (U.S.-Saudi Arabian Business Council [USSABC] 2013; see Figure 1.1).



**Figure 1.1 Spending for Key Public Sector Areas in KSA (Jadwa Investment 2013).**

In 2000, the custodian of the Two Holy Mosques, King Abdullah bin Abdul-Aziz, suggested the development of the National Plan for Information Technology, which recommends the adoption of e-learning and distance education in HE and the establishment of a national centre to provide the technical support, tools and means necessary for the development of digital educational content (Aljahni, Obayya & Skinner 2010). The centre is called The National Centre for e-Learning and Distance Learning. Notable among the objectives of the centre are the promotion of e-Learning and distance education applications in compliance with quality standards and Support for research in the fields of e-Learning and distance education (NCEL 2014). The centre provides “Jusur”, an LMS, for the institutions as well as consultation and strategy support for transitioning to e-learning (MOHE n.a). Jusur includes the Learning Content Management System (LCMS), which is an environment through which learning objects can be stored in learning object repositories and used to develop teaching materials. The Saudi

learning object repository provides the support for this function. Also included within the Jusur system is the virtual classroom system, which is distinguished by the possibility of communication between students and faculty through voice, image and text, file and media sharing, a whiteboard facility (Zouhair 2010).

It is now obvious that the KSA is equipped to move on to BL in HE. The question is whether BL is the perfect learning environment, and if yes, what the perfect infrastructure/environment will be for BL in Saudi Arabia. In order to establish answers to these questions, this study investigates the blended learning environments in universities. The study is unique in that it does not focus exclusively on the traditional learning environment or purely on online learning, but rather assesses student, staff and expert preferences and experiences related to the BL environment while taking into account the social, economic and religious contexts of Saudi Arabia.

### 1.3. WHAT IS BLENDED LEARNING?

The definition of BL continues to evolve and it is quite difficult to demarcate it in the presence of terms such as online learning and e-learning. It is not distance learning because distance learning targets a separate audience. It certainly classifies as online learning as well as e-learning and a combination of both – online because the content and interaction of the actors is partly online (and partly f2f) and “e” because the online part is enabled electronically.

Jay Cross, in the foreword of (Bonk & Graham 2012) makes an interesting point that learning was always blended. It was a blend of story-telling, song, recitation, reading aloud, flash cards, puppetry and corporal punishment. He goes on to say that the right question to ask is “why not blend?” In his view, Blended Learning can take place anywhere – while in a queue at a Grocery store or while riding a bus home. The point he clearly makes here is that interaction is not only f2f interaction, but learner-to-content, learner-to-learner, and learner-to-infrastructure. He quotes Elliott Masie and says, “The magic is in the mix”. This captures the essence of the application research in BL. In the second foreword of



(Bonk & Graham 2012), Michael J Moore mentions the origins of BL when he was at the Open University in the UK where the instruction was by correspondence and student meetings in classrooms at study centres to advise, discuss and supplement the material designed by his colleagues.

BL has benefited from the contribution of several experts whose primary interest has been distance learning. Nevertheless, their contributions have provided the thrust for the growth of BL. Curtis Bonk, Professor of Instructional Systems Technology at Indiana University has been an active researcher and practitioner of online and e-learning. His books in the area of emerging technologies for learning illustrate the use of technologies for Blended and online learning, in general. He has created a large amount of online reference content from his own interactions, lectures and presentations. In one of his books, he mentions, in the context of Blended Learning – “Online pushes reading and writing skills as well as presentation skills and technology skills. We must rapidly accelerate means of recognizing learning accomplished online (e.g. challenge tests). Learning must be offered "on demand" and across every device imaginable. However, blended means just that--online is not a substitute for face to face and team interaction.” In his recent book (Bonk & Khoo 2014), the problem of the design of online content and learner engagement is addressed. Specifically, the problem concerns the high dropout rates of online learners in the US. He attributes it to very unimaginative content which does not provide any motivation for the learner to engage in the learning activity. They propose a framework called TEC-VARIETY, an acronym, which indicates innovative means of engagement so the learner is motivated to learn and continues to do so. This is sufficient evidence for the mention by (Hartmann & Moskal 2004) and (Moskal et al 2013) that a fundamental change of the framework is necessary for online learning and BL to proliferate to the extent expected.

Prof. Gilly Salmon, Swinburne University, is another luminary in online learning. For over a decade she has published several books and focuses on learning transformations in HE and the innovative use of technology for such transformation. She has contributed to online learning since 1995 with (Salmon

1995). E-tivities, standing for online activities is a topic of research and she initially introduced it as early as 2002 when online education was being adopted in institutions and individual instructors created course material for online courses. Only 40 % of the universities in the developed world had a VLE/LMS. Tony Bates, another luminary in this field had expressed his concern about the quality and consistency of the approach of getting the individual instructors to develop the online content. In (Salmon 2013), she has effectively demonstrated the results of a decade of research in making the course material development a team activity rather than an individual activity. This, again clearly illustrates the changing framework necessary to sustain online and blended learning.

Prof. Tony Bates, a founding member of the British Open University was involved with Education Media Research. From then on he has held several positions both academic and corporate and has contributed extensively by planning and deployment of several distance/online learning projects. In his latest book (Bates & Sangra 2011), the focus is on taking a radical approach to management of technology for education. With a set of case studies, it provides recommendations for integrating technology effectively and efficiently into HE institutions. (Bates 1994) is one of his many publications in distance education with a rather cynical title. Perhaps, more significant in our context is (Bates 1994b). His contributions in distance learning and online learning are immense and specifically relevant given his involvement with non-classroom education from the beginning of his career.

Although blended learning has become a buzzword in HE, military settings, business and government, there is still uncertainty about what the term refers to. It is vital to define it. Here are some of the definitions or references made by the pioneers in BL.

Bonk & Graham (2012) mention that a wide range of definitions of BL have emerged, but most of these are just variations of a few common themes. They illustrate the compiled definitions from literature as below:

- 1) Combining instructional modalities (or delivery media);
- 2) Combining instructional methods; and

### 3) Combining online and face-to-face instruction.

They mention that these definitions have been mentioned in literature between 2000 and 2003 and choose to use the last one as the closest to represent BL.

Gilly Salmon has not mentioned much directly about BL, although she is a practitioner. In (Salmon 2005), she mentions that campus-based universities are integrating online components into their more traditional face-to-face approaches as add-ons or in a blended mode. At her university, the course information mentions courses that are a mix of online and on-campus delivery as BL. At the University of Western Sydney, Blended learning refers to a strategic and systematic approach to combining times and modes of learning, integrating the best aspects of face-to-face and online interactions for each discipline, using appropriate ICTs.

Tony Bates, in (Bates 2005) remarks that there is no consistency in terminology yet and considers mixed-mode, hybrid and blended learning as some combination of classroom and face-to-face learning. He prefers the term mixed-mode to indicate courses where there is a reduction in class time and more online time. (Bates 2013) mentions two specific definitions of BL –

1. A formal education program in which a student learns at least in part through online content delivery and instruction with some element of student control over time, place, path or pace
2. A form of education that combines face-to-face classroom methods with computer mediated activities. According to its proponents, the strategy creates a more integrated approach for both instructors and students

Blended learning could be a mixture of face-to-face instructor-led and self-paced online learning

Steele 2011 summarises the various definitions of BL in literature as well as those used by Australian universities. She remarks that the many definitions of BL are techno-centric and often offer little pedagogical direction. She then mentions that the lack of a pedagogically focussed definition for BL makes it difficult to designate the nature of implementation, measure success and provide

institutional support for BL. This is perhaps a fact that is very relevant in terms of an evaluation of the success of BL. She proposes a definition for BL as “Blended learning refers to enriched, student-centered learning experiences made possible by the harmonious integration of various strategies, achieved by combining f2f interaction with ICT”

The working definition considered for our context is from (Bates 2013).

#### 1.4. RATIONALE FOR THE STUDY

The Saudi Arabia General Investment Authority (SAGIA) reported that there is vast potential for private business players and foreign companies to invest in the secondary and HE sector in Saudi Arabia. Prior to year 2000, the government policies in KSA denied foreign companies and universities involvement in HE sector. A large percentage of Saudi students had to pursue HE abroad. The report also mentioned that a high percentage of doctors, engineers and other professionals were foreigners. In 2000, SAGIA was formed and the changes to policies were brought about to permit foreign players to invest in the HE in Saudi Arabia. ‘Economic Cities’ are the consequence of the above changes; these are enabling local students to obtain international training and learning (SAGIA n.d.). Consequently, there is bound to be a huge demand for BL technologies and skills to tap into the potential offered by these changes.

Garrison and Vaughan (2008) and Snart (2010) mention the many practical benefits in the use of BL. These include managing increased enrolment, enabling better usage of facilities, thereby reducing lecture schedules, and improving student retention and outcomes. BL further facilitates teaching and learning, increasing student access and flexibility and organisational cost-effectiveness.

In this context, this study’s survey-based research on BL trends in Saudi Arabia becomes very relevant. The results of this research may be considered as valuable inputs for policymakers, investors in the Saudi HE sector, educators and university management.

The rationale for the study is discussed from a three-point perspective – from the demographic perspective, the cultural perspective and the perspective of ICT trends in KSA. The aspects of demography those are relevant for this study as presented by the Central Department of Statistics and Information (CDSI 2012) are described below.

The total population of Saudi Arabia based on the 2013 census is approximately 29,994,272 million, out of which an average of 51 % are under the age of 25 (52 % male & 48% female) based on the 2013 census (Index mundi, 2013). The three largest cities are Makkah, Madinah and the capital, Riyadh, where 13 large universities targeted by the survey conducted in this study are located. In the 24 public universities, there are 669271 students with 30763 faculties, yielding a ratio of one faculty for every 22 students. The CDSI report also suggested that Arabic is the first language for a large majority of students.

(Pavan 2013) provides a comprehensive look at the education scenario in the KSA, with insights into some of the policies that have encouraged enrolments both locally and abroad. She mentions that the establishment of the Saudi Electronic University (SEU) in late 2011 was a big step in managing and encouraging enrolments for formal courses. The first clear mention of BL is on the web site of the SEU, although apart from the mention of it, there are no other details. A book titled “Higher Education in Saudi Arabia. Achievement, Challenges and Opportunities” (Smith & Abouammoh 2013) has been published in 2013 is the first authoritative publication that provides some insights into HE in the KSA.

The social and cultural aspects of Saudi Arabia those are relevant for this study is described, now. Saudi Arabia is the birthplace of Islam; thus, Saudi society is strongly influenced by this religion. Al-Saggaf (2004) presented that ‘Islam plays a central role in defining the culture, and acts as a major force in determining the social norms, patterns, traditions, obligations, privileges and practices of society’ (p.1). Similarly, there are traditions that are common in parts of the Arab region that dictate that women must be housewives and caregivers for children (Alhazmi 2010). For legal and religious reasons, interactions are restricted

between men and women who are unrelated or unmarried. This is a general rule that applies to education, business, public transport and social situations such as restaurants (Alhazmi 2010). This restriction can also reflect on online interactions to some extent (Al-Saggaf 2004). Thus, segregation of the genders influences all aspects of life in Saudi Arabia, including education (Alebaikan 2010).

In this study, the survey results are analysed based on gender and offer an insight into the differences in perceptions of BL amongst the male and female respondents. As discussed above, the study aims to analyse the perceptions of BL amongst staff and students across the universities in KSA. Although many of the results could be generally applicable to and offer valuable inputs for the implementation of BL anywhere in the world, the demographic and cultural impacts reflected in the results are particularly applicable to the Arab world. There have been innumerable studies on BL focusing on Western universities, but very little work has been conducted which takes into account the social, cultural and economic demography of Arab regions. In this context, this study is considered to be highly relevant.

#### 1.5. RELEVANCE TO THE STUDY OF INFORMATION AND COMMUNICATION TECHNOLOGY INFRASTRUCTURE IN THE KINGDOM OF SAUDI ARABIA

The Ministry of Communications and Information Technology (2011) stated that the National Communications and Information Technology Plan was established for the country's transformation into an information society and digital economy. This would increase productivity and provide communications and IT services to different sectors of society in all parts of the country and build a solid information industry that would become a major source of income. The report also suggested that the government invested considerable resources in ICT to increase the computer literacy of the population. These resources were initially directed at education in general, but later at more advanced applications such as BL. Thus, there is an expectation that instructors will incorporate ICT features

and functions into the curriculum to overcome some the constraints of the traditional learning environment.

Studies on early adopters have indicated that Saudi students and faculty have positive attitudes to using the Internet in education, identifying flexibility, accessibility and efficient communication as key attributes. Overall, instructors are willing to incorporate ICT functions into their curriculum. However, at the time of writing, e-learning and BL programmes have not yet been universally adopted in Saudi universities. This is partly due to instructors' concerns regarding connectivity and loss of privacy after working hours (Al-Wehaibi *et al.* 2008).

Alebaikan and Troudi (2010) stated that BL would enforce change in the working culture of both staff and students. It demands a high level of discipline and responsiveness from the students, whilst for lecturers, it poses the additional challenge of selecting an optimal course design for a blended approach. Both faculty and students refer to time constraints in an already full schedule (Alebaikan & Troudi 2010). Further advances in ICT and changes in the attitudes of students and staff may help alleviate some or all of the above-mentioned barriers. This study particularly aims to investigate the current perceptions and attitudes of students and staff towards BL.

### **1.6.1. Aim of the study**

The general aim of this thesis is to assess the current status of BL in KSA and to identify the obstacles and challenges encountered at universities when implementing a BL infrastructure. This will be done by investigating the satisfaction and perceptions of HE students, staff and experts in relation to a BL environment that supplements the physical world with the digital domain at Saudi universities. The validity and reliability of this construct needs to be verified. A means of performing such an evaluation is essential. Such a facility or tool is necessary for a quantitative evaluation of the factors for adoption of BL or

those that impede its adoption and effective use. A tool called The Blended Learning Environment Instrument (BLEI) will be developed and applied in the investigation performed as part of this research. Therefore, it is part of the aim of the project to design and develop such a tool.

The availability of the tool will assist researchers and developers when evaluating BL in HE across the following five core aspects of blended learning environments: Infrastructure, Access, Interaction, Response and Results. The tool is designed to integrate ideas from traditional learning, online learning and distance learning instruments.

The tool should be able to effectively gauge perceptions on BL environments in HE. It will be piloted with the help of students enrolled in full-time BL courses at universities in KSA. After using the tool in the current research context, it should be extensible as a generic tool to evaluate similar efforts.

There are several benchmarking technologies/methodologies to evaluate distance/e-learning that have evolved since 2005. All of them take an organisational approach to assessing the e-learning/distance learning implementation, deployment and effectiveness of the deployments. Ironically, while the whole theme is about learner-centred teaching, there is a lack of an assessment from the learner's perspective. In other words, neither of the assessing methodologies mentioned so far provide an assessment from the consumer side. BL comprises components of classroom teaching as well as online teaching. There exist evaluation methods for traditional teaching methods as well as for online learning, separately. In what manner will these be assessed and how will they be applied in the context of BL – pedagogy, outcomes, and processes? As mentioned earlier on, most literature in BL recommends that the entire course framework be redesigned for delivery via BL. Also, what is the role of the learner in the entire evaluation? BLEI attempts to provide a learner's evaluation of Bland demonstrates the effectiveness of BL in that particular context.



### **1.6.2. Objectives of the study**

The objectives of the thesis are as follows:

- To research the literature concerning the impact of the cultural, ethnic and religious context on BL and how is this applicable to all countries/contexts with a similar ethos. Specific focus will then be applied to influencing factors within the Middle East and specifically KSA as the subject of the case study;
- To assess HE students', staff's and experts' perceptions of BL environments within HE;
- To determine the effectiveness of BL techniques in Saudi universities, taking into account the cultural, social and economic context;
- To design, verify and validate a tool for evaluating the construct, deployment and impact of BL and to make it extensible for use as a generic evaluation tool for BL environments;
- To determine the reliability of the tool and its appropriateness within the HE environment, taking into account the new aspect of 'infrastructure' which is introduced in it;
- To investigate the impact of gender, level of study and subject area on the BL environment; and
- To provide valuable recommendations for the implementation of BL based on the analysis of the two surveys designed to gauge students', staff and experts' perceptions of BL.

## **1.7. SIGNIFICANCE OF THE STUDY**

### **1.7.1. Contribution to the literature**

In recent years, the integration of the physical world with digital domain environments has affected HE in Saudi Arabia. At present, the country is moving rapidly towards adopting the most developed education technologies to enhance the learning environment in all aspects and levels of education. The establishment of the National Centre for e-Learning and Distance Learning

(NCEDL) and the Saudi Electronic University (SEU) are substantial evidence in this context. In order for universities to create and encourage effective learning environments, more consideration will need to be placed on adopting successful BL environments. This can be done through a combination of different types of learning resources and activities with a range of learning technologies in and out of the traditional classroom. In such an environment, learners can interact and build ideas by mixing synchronous and asynchronous instruction based on the Internet and computer technology.

The many studies examining good practice with a view to encouraging effective BL are dominated by examples from the West. Thus, this thesis fills an important gap in the knowledge by focusing on effective BL in an Arab cultural context to reflect the various blended learning communities being served.

### **1.7.2. Theoretical contribution**

The data were collected via the blended learning environment instrument (BLEI) with a wide range of information provided by students and staff members at Saudi Arabian universities. This case study can contribute to providing useful information to policymakers and decision makers in the public and private HE sectors in KSA who are assessing the current status of BL and solutions at universities, as well as obstacles and problems related to embracing a blended approach to learning. This research will add to the growing number of studies on this topic by investigating the BL experience in the context of HE.

To date, various methods have been developed and introduced to measure students' perceptions and interaction with their learning environments. In most recent studies, the combination of qualitative and quantitative methods in learning environment research has been demonstrated to be complementary; such an approach is expected to give deeper and richer results in studies concerned with the educational environment.

The learning environment in HE can be measured in different ways. A variety of instruments have been developed to gather quantitative data on learning environments (Chandra & Fisher 2006; Moroney, Leong & Boorer n.d.), but only a few focuses on hybrid or blended learning in HE, and each has its advantages and drawbacks. The following are some examples of these instruments:

- The College and University Classroom Environment Inventory (CUCEI), which assesses perceptions of the classroom environment in universities and college classrooms from a psychosocial perspective (Fraser & Treagust 1986);
- The Constructivist On-Line Learning Environment Survey, which was designed by Taylor and Maor (2000) to monitor the quality of online teaching and learning;
- The Web-based Learning Environment Instrument (WebLEI), which was developed to assess students' perceptions of online learning by Chang and Fisher in 2001, and has been used to evaluate environments in which learning takes place online (Moroney, Leong & Boorer n.d.); and
- The Distance Education Learning Environments Survey, which was developed to assess and explore the psychosocial learning environment in postsecondary distance education (Walker & Fraser 2005).

One of the functional components of BL is e-learning. Therefore, it is essential to consider the evaluation methods used for e-learning and distance learning and examine whether they provide a means of gathering the perceptions of the service delivery. We look at the contexts of e-learning and distance learning in the UK.

In the UK, with the uptake of e-learning in the HE institutions, the HEA with the JISC, coordinated a benchmarking exercise to help the universities evaluate their status with respect to embedded e-learning. These efforts lasted over three years (2005-2008) and used five benchmarking technologies ELTI, eMM, MIT90s, OBHE/ACU and Pick & Mix. Each of these technologies appealed to different

institutions, given their focus. Quoting from HEA 2008b, p12, section 5.4, *“The sense of belonging with a particular group of institutions was a mostly tacit but significant factor in the choice of methodology. No Russell Group institutions chose Pick & Mix, mostly opting for OBHE/ACU or eMM. The former was noted as a well established methodology with an international reputation; the latter was attractive to research-led institutions on account of its underpinning evidence base. MIT90s appealed to institutions interested in establishing a bespoke framework for strategic change. ELTI was attractive to institutions that were particularly interested from the outset in an inclusive approach to e-learning benchmarking involving various staff groups and institutional processes”*. E-xellence was another benchmarking instrument that originated from the European Association of Distance Teaching Universities (EADTU) in 2007. It was an outcome of a project initiated in 2005. It contains benchmark statements and criteria with indicators. The criteria include Strategic Management, Curriculum Design, Course Design, Course delivery, Staff Support and Student Support.

ELTI, one of the benchmarks that specifically evaluated infrastructure, is no longer used (VC 2012) and therefore will not be discussed in our context. eMM (e-Learning Maturity Model) was developed by Professor Stephen Marshall of the Victoria University of Wellington<sup>12</sup> for application in the context of the New Zealand tertiary education sector. eMM is based on the principle that an organisation's processes mature along a five step model of capability in e-learning moving from 'ad hoc' processes and decision-making to an informed, engaged and reflective culture of continuous improvement (HEA 2008b).

eMM is institution oriented and focuses on the delivery side of e-learning. MIT90s is a conceptual framework developed at the MIT, USA in the 1990s for planning and monitoring strategic change in the context of e-learning. It comprises monitoring five interactive elements strategies, the organisational structures, individuals in roles, management processes and technologies. This technology too focuses on the organisational and delivery side of e-learning (HEA 2008b). It uses the notion of levels – evolutionary and revolutionary. There are five levels of which levels 1, 2 are tagged evolutionary and levels 3, 4, 5 are

tagged revolutionary. The notion of levels has already been applied to education systems with the use of a five-point scale. This has been applied to benchmarking and ELTI and Pick & Mix are scale-based. Pick & Mix version 2.0 uses the MIT90s framework for tagging its criteria.

OBHE/ACU (Observatory for Borderless Higher Education/Association of Commonwealth Universities) is a collaborative benchmarking methodology where a group of institutions get together and jointly agree relevant areas of interest in e-learning and in a later phase, look for good practices. The OBHE/ACU is structured on eight themes, namely, Strategy Development, Management of e-Learning, e-Learning Delivery, Resources for e-Learning & Value for Money, e-Learning and Students, e-Learning and Staff, Collaboration & Partnerships, and Communications Evaluations and Review.

Pick & Mix is based on a systematic review (HEA 2008c) of approaches to benchmarking e-learning, looking for commonalities of approach. It was, along with OBHE used in all three phases of benchmarking in the UK. Pick & Mix does not impose methodological restrictions and has incorporated (and will continue to incorporate, in line with need) criteria from other methodologies of quality, best practice, adoption and benchmarking (HEA 2005). The 24 “Quality on the Line” benchmarks and the APQC indicators, Australian studies including recent work from ACODE, NLN and Becta (ILT Self-Assessment Tool and The Matrix), and the New Zealand e-Learning Maturity Model are the various methodologies that Pick & Mix has drawn from.

Apart from these, there are other methodologies such as MASSIVE, OpenECB, SEVAQ+, BENVIC, CHIRON and ACODE. Similar efforts in the USA that began in 2000 with “Quality On the Line”. Currently, the Quality Matters Rubric is the standard for evaluating the design of online and blended courses in HE in the USA. It comprises a set of 8 general standards and 43 specific standards used to evaluate the design of online and blended courses.

Smythe 2012 mentions that despite growing evidence of improvements in student learning outcomes, there lacks a coherent body of research that unequivocally demonstrates learning benefits of BL over traditional modes of instruction. The means to evaluate its effectiveness is frequently lacking since there are a relatively limited range of tools and methods that support staff in designing blended learning curricula. He goes on to propose Blended Learning evaluation Rubric (BLER), a course design rubric intended to assist in course design, redesign and/or evaluation of BL courses. Unfortunately, this too does not address the learner's view.

Our study provides the student and staff's perceptions of BL, as it is deployed and in practice at the HEI they are part of. The BLEI is developed to provide an assessment of blended learning, utilising aspects of both quantitative and qualitative design to support on-going research and for general use. BLEI incorporates multiline textboxes next to each question for the students' respondents, in addition to quantitative questions. It was considered that qualitative measures would usefully supplement and extend the quantitative analysis.

Higher education staff members were also invited to respond to a survey integrated with multiline textboxes. The aim of this was to assess and identify the current status of BL in HE and gain a picture of staff satisfaction using educational technology for the traditional learning environment. Data were gathered from around 35 universities in KSA in the 2011–2012 academic year.

The above contributions to literature and theory development can also be evidenced in the following publications, which have already arisen out of the work undertaken for this thesis:

- Aljahni, A., Obayya, S. and Skinner, H. (2010) 'Encouraging effective blended learning in higher education in the Kingdom of Saudi Arabia', paper presented at the 5th International Blended Learning Conference,

'Developing Blended Learning Communities', University of Hertfordshire, 16–17 June.

- Aljahni, A., Al-Begain, K. and Skinner, H. (2011) 'ICT Infrastructure of blended learning in higher education', in *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2011*, pp. 524–533. Chesapeake, VA: AACE.
- Aljahni, A., Al-Begain, K. and Skinner, H. (forthcoming) 'Development and validation of the blended learning environment instrument (BLEI) in higher education'. *Journal of Interactive Learning Research (JILR)*.

### **1.7.3. Contribution to practice**

The results and outcomes of this research will provide BL instructors, administrators, educators and other concerned researchers with data regarding BL in universities. Student and staff views, perceptions and satisfaction are important, and need to be continuously assessed to identify the current status of BL in HE. The findings of this study will assist in developing the learning environment at universities and support the BL approach. To accomplish this, the current research will present a case study examining the adoption of blended learning in KSA in order to explore how BL can effectively transform HE in the context of the Arab world, leading to improvements in the learning experience and mapping out pathways to success for everyone committed to BL, including HE administrative leaders, faculty members, instructional designers and researchers.

The study provides an evaluation of the benefits, influences, challenges and future professional development needs, particularly with regards to infrastructure for BL in HE, particularly in Saudi Arabia. This study provides insight into the perceptions on motivation and engagement of students and instructors to create effective BL environments that enhance their interactions, teaching and learning. It further aims to contribute to the evolution of pedagogy in Saudi universities that relates to the student's ability to construct knowledge.

## 1.8. OVERVIEW OF THE METHODOLOGY

The research takes an extensive case study approach supported by triangulated data. This was adopted as an accepted means of increasing the reliance, reliability and reducing bias resulting from the single interpretation of a single source of data and in order to increase the validity and credibility of the results (Skelton 2008). Another aim of adopting this methodology is to give a more detailed and balanced picture of the condition of the BL environment in HE in the Middle East and specifically the Kingdom of Saudi Arabia.

Triangulation can be defined as a process of using multiple methods, mainly qualitative and quantitative approaches, to study the same phenomenon in order to increase the study's credibility (Hussein 2009; Yeasmin 2012). The use of triangulation in social sciences emerged from the work of Campbell and Fiske (1959) on validating research results; these researchers developed the idea of 'multiple operations' (see Hussein 2009). Consequently, HE students', staff members' and experts' experiences and perceptions of their learning environment were investigated using quantitative and qualitative methods. Quantitative data were gathered from HE students at universities all over Saudi Arabia using BLEI, and qualitative data on students' experiences were collected by open questions added to the BLEI survey. In addition, quantitative and qualitative data on staff and expert experiences and perceptions were gathered by developing a separate survey on the use of BL environments.

This study focused on undergraduate and postgraduate students, as well as experts, from over 35 universities in KSA; the participants were either approached directly or through the National Centre for E-learning and Distance Learning (NCEL).

In this study, a new instrument was developed to gather higher education institutions (HEIs) students' perceptions and attitudes about BL. The study also developed a tailored version of this survey for HEI staff and experts. In order to gain feedback on these data collection instruments, before they were distributed,



copies of both surveys were sent to 12 personal contacts, including HE academics and education technology experts working in Saudi Arabia and one working in Jordan. The HE academics were deans, professors and lecturing staff. Based on their feedback and the data collection instruments themselves, these surveys were piloted to 25 personal contacts (students, staff and HE educational technology experts) using the online survey software 'LimeSurvey' before final distribution. Ultimately, 550 students took part in the study (participants), with 269 completing the BLEI survey in full (respondents). Moreover, 211 staff took part in the study (participants), with 91 completing the survey in full (respondents) using the questionnaire designed specifically for HE staff members. Thus, 281 student responses to the BLEI survey and 120 staff responses to the staff survey were only partially completed by the participants; these were removed from the SPSS analysis data to increase the reliability of the statistics. The BLEI and staff survey were piloted in late 2011 and early 2012 amongst students enrolled in full-time blended learning courses and staff at KSA universities. Data were recorded using LimeSurvey and evaluated using predictive analysis software (SPSS Statistics).

#### 1.9. LIMITATIONS OF THE STUDY

Although this study was limited to Saudi universities, the study techniques and general case study approach for investigating the BL environment could be used in future on a multiple case study basis which includes worldwide HE.

The undergraduate and postgraduate students involved in this study were primarily campus-based traditional students who were not totally dependent on online learning systems; however, most had access to online LMSs. Saudi universities are still in the novice stage of the desired and required BL implementation. As Underwood, Bartolome and Grave (1998) reported, there is a common problem in that, despite 'working in a new mode of teaching', university lecturers and tutors 'are still using very traditional approaches to assessment' (see Kendle & Northcote 2000, p.9). Consequently, most of the staff

may not have a full awareness of all the technical features and elements that could be utilised in an ideal blended environment.

The pace of technological advancement will make the relevance of this study time-bound, and hence some of the results may be redundant in a few years. However, as mentioned above, the BLEI instrument and evaluation approaches adopted in the study could be used universally.

#### 1.10. OVERVIEW OF THE THESIS

This PhD thesis consists of six chapters, as described in the following. The present chapter introduces and gives an overview of the origin and concepts leading to the study, and provides a brief description of the methodology and significance of the study. Thus, Chapter 1 discusses the background to this thesis, and outlines the significance of the study in terms of its contribution to the literature, theory and practice.

Chapter 2 reviews a wide range of literature pertaining to general learning environment research, online learning and the evolution of the BLEI questionnaire. The development of the learning environment is discussed before the advent of online e-learning; this still has an overall influence on blended teaching delivery mechanisms. It presents a critical review on the effectiveness of BL, existing deployments and emerging trends. Chapter 2 also provides an overview of the ICT infrastructure of BL, specifically the concepts of e-infrastructure being deployed around the world and in Saudi Arabia.

Chapter 3 describes the methodology that will be used in the study, including the research questions, sample and measures used. The adoption of the BLEI survey instrument is also justified. Finally, the additional qualitative methods involving students and staff are described.

In Chapter 4, the validation of the BLEI are completed and student data are presented, along with preferences within the e-learning environment. Key

indicators are drawn from the data, which will form the basis of the optimal model proposed for the blended environment. The chapter also examines the student outcome variables and attempts to draw some statistical inferences from the BLEI data. Explanations of differences between student groups are suggested, along with explanations of preferences within the BL environment. This chapter also critically analyses the comments from the student surveys and summarises these qualitative data to determine student preferences concerning their ideal mode of learning based on the distinct groups of students identified in relation to the data. Moreover, the findings allow reflections from staff at Saudi universities on the optimal BL environment recommendations. The chapter therefore reports academic and administrative staff's reflections on experiences with blended initiatives, as well as giving their opinions on ideal future directions.

Chapter 5 presents a discussion of the findings in light of the literature review in Chapter 2. It critically analyses the findings by considering elements such as access, interaction, response, results and infrastructure. It is then compared to the results presented in the existing literature review and related works. Leading from a summary of the above analysis, the possible obstacles facing the large-scale adoption of BL are highlighted.

Finally, Chapter 6 outlines conclusions and recommendations for an optimal BL environment for HE in general and in the context of Saudi Arabia in particular.

## **CHAPTER 2: LITERATURE REVIEW**

While there are multiple definitions to Blended Learning (BL) the most accepted definitions within the Higher Education environment is what is documented by Graham, Allen, and Ure (2003) as a combination of online and face-to-face instruction modalities. Taking the BL definition further, Watson (2008) states BL encompasses any learning experience that integrates some use of educational technology to others that focus on a specific percentage combination of online curriculum and instruction in a face-to-face setting.

The term e-learning typically comprises of full online learning as used in distance education (Haythornthwaite & Andrews, 2011, p112). However, campus-based higher education online learning usually takes a blended (sometimes referred to as a hybrid) form, combining traditional classroom teaching with online activities and resources (Vaughan, 2007). Therefore, BL can be stated as “a design approach whereby both face to face and online learning are made better by the presence of each other”. Power (2008) broadens its scope to include online synchronous communication, such as webinars and chat rooms. He calls this blended online learning.

### **2.1. INTRODUCTION**

The model of hundreds or more HEI students passively listening to a lecturer with a chalkboard at the front of a classroom is no longer acceptable with the existing cut-throat competition amongst HE institutions offering where students have many choices. The educational technology and mixed-mode instruction revolution has affected most HEIs and tertiary education on a global level (Hiltz and Turoff, 2005).

The great philosopher and thinker John Dewey(1938) pointed out that the strict authoritarian approach of traditional education was overly concerned with

delivering preordained knowledge, and not focused enough on students' actual learning experiences. He insists that education requires a design that is grounded in a theory of experience. He sides neither with traditional education, nor with progressive education, but with the understanding of how humans have the experiences they do, and how this understanding is necessary when designing effective education.

Because of Dewey's insistence on this foundational aspect to his philosophy, he began a movement that generated the development of experiential education programs and experiments. His philosophy continues to remain foundational in designing innovative educational approaches and programs today

Blended Learning naturally lends into Dewey's idea of experiential learning due to the advantages provided by technology. Dr Liam Boyle asserts that technology can be used to support active learning (learn by doing). Similar views were outlined by Norton and Gonzales asserted that:

Technology is a powerful tool to support inquiry-based learning- learning that is constructivist, values conceptual understanding over procedural efficiency, responsive to student's prior knowledge and experience, builds connections to the outside world, and supports development of higher order thinking skills, prepares learners for lifelong learning, and promotes educational equity as presented in Farrell et al (2008).

Learning is a social activity (Vygotsky, 1978). Social interaction plays a fundamental role in the development of cognition (Kearsley, 1994; Buchberger, 2000) that results in active learning. Human interaction is arguably the most powerful tool and skills development (Hall and LeCavalier, 2000); as a result, it enables active user participation leading to new ways of co-constructing ideas. It is in social interaction that information can become knowledge. Social learning requires students to work in groups and it will enable them understand the way knowledge develops and changes today. Since knowledge is expanding exponentially in the information age, no one individual is an expert, rather individuals are part of a social network with others.

Most people learn best when they are actively engaged in collaborative activities. Salomon and Perkins (1998) report that students' construction of knowledge is enhanced when they engage in the co-construction of knowledge with peers and with their tutors.

Emerging social networking / Web 2.0 technology tools extend opportunities for interaction with the tutor, peers and content enabling students to work in groups beyond the classroom walls, thus facilitating and advancing the learning process. Such group-oriented efforts by students result in new learning strategies that are consistent with the concept of social learning.

The traditional face-to-face mode of delivery in the form of lecturing and story telling has been the norm ever since the establishment of the world's first university, The Academy, by Plato in 387 BC.

In the traditional face-to-face approaches, teachers tend to continue with their long embraced lecture-based instructivist approaches which rely on the development of a set of instructional sequences with predetermined outcomes based on an 'one-size fits- all' approach.

Gaps currently exist between practice and what is actually required to address the learning needs, styles, and preferences of majority of today's students who prefer to learn in context. Further, the concept of knowledge and its nature have changed dramatically in the recent past especially with the advent of the World Wide Web and the Internet; the kind of skills students need to develop to be prepared for the workforce of the 21st century is a lot different from their predecessors.

Constructivist approach is considered as the most recognised and preferred method of instruction over the last two decades. Constructivism is a philosophy of learning based on the premise that knowledge is constructed by the individual through his or her interactions with the environment, including other learners. Recently, studies have shown that HEIs increasingly emphasise the student learning experience within a constructivist framework (Skelton 2008).

Despite the concerns about traditional face-to-face learning, it has also significant strengths of its own such as the possibility of strong human interaction which is generally more powerful than in the online mode due to its capability for visual cues.

Thus both the traditional face-to-face and online instruction have their own unique strengths and weaknesses. That is why a strong case is now being made for a blended approach (discussed in section 2.4) whereby both online and face-to-face modes of delivery are appropriately integrated to maximise the strengths and minimise the weaknesses of both. Blended learning approach is the best way of unlocking the educational potential of new technology

Not only does this reduce lecturing time, but it may also improve student performance. As initially found by Smith (1993) and later professed by Dalsgaard and Godsk (2007) that the transformation of a traditional curriculum-based and lecture-based module into a fully blended learning experience designed from a social constructivist approach makes the lecturer become a guide for more student-led and self-directed study. Therefore, there is increasing demand for staff in the HEI sector to engage each learner under their care, whether online or through classroom-based instruction (Luke 2003).

There is also a growing body of evidence (e.g., Bell and Garofalo, 2005; J Salinas, 2008) As presented in Thomas (2000), other authors such as Nix, DeBella, Gierhart, Gill, Harader, Richerson, and Tomlinson assert that traditional classroom instruction can be enhanced through the use of web-based multimedia and communication tools. The fact that technology can play an integral part in the constructivist learning environment is being increasingly recognised by all stake holders in HE. Several researchers (Meyer, 1998; Nanjappa and Grant, 2003) agree that technology plays a crucial role in facilitating constructivist approaches. The focus of both constructivism and technology are on the creation of engaging and collaborative learning environments.

Lunenberg, (1998, p. 75) argues that constructivism and the integration of computer technology in the curriculum offer real promise for improving the achievement of all learners in the core subject areas.

The 'cognitive tool' perspective holds that learning occurs only when learners actively engage themselves in complex learning environments that foster higher order thinking and problem solving skills.

The socio-cultural work of Vygotsky (1978) provide a basis in this regard. According to Vygotsky, tools mediate and extend our ability to interact with each others by making it possible to externalize our thinking into forms that we can share with others and can act up on. He proposed that learning requires two mediational means—tangible tools (technical tools) and intangible tools or signs (semiotic tools). The role that technology can play in learning is of particular importance when considering the idea of tools mediating human action.

Machnaik (2002) argues that students learn from thinking in meaningful ways “when computers support knowledge construction, explorations, learning by doing and conversing” (p. 7). Meaningful learning will result when technologies engage learners in knowledge construction, not reproduction; conversation, not reception; articulation, not repetition; collaboration, not competition; and reflection, not prescription (Jonassen, Howland, Moore, and Marra, 2003).

However, Researchers (e.g., Dede,2005; Saunders and Klemmings, 2003; Olson and Wisher, 2002) have cautioned against anyone thinking that technology always brings in learning or teaching, when in fact, the effects are determined more by the way technology is used and the context in which the use occurs. Poole (2009) asserts, “technology is just a tool, and it can only really enable students to do better if they utilize it properly. ICTs have only a positive effect on learning, when used in an 'appropriate way and in the right circumstances' (Saunders and Klemmings, 2003: 75). Therefore, it is critical to know what is appropriate and what is not. The current underlying assumptions in the literature of 'meaningful' or 'appropriate' are based on the concepts of learner-centredness, Vygotsky's and Jonassen's social constructivism, Wenger's



Community of Practice (CoP) and the importance of collaboration, self-directed learning and a focus on Knowles' adult learning principles (Carr, Brown, Cox, Czerniewicz, Deacon, and Morrison, 2005). Pedagogical techniques such as reflective teaching practice, collaborative learning, self pacing, and intensive writing may work better in online learning environments (Picciano, 2006).

However, as Hunt and Kitchen (2004) mentioned, there is limited research on how to best manage change in the technology-rich learning environment for students with different learning styles and experiences. Most university degrees are supported at some level by educational technology, such as LMSs, which provide course materials and interaction accessed online via the Internet or an intranet. Education has to be restructured and curricula redesigned to tap the full potential of BL and to achieve the desired transformation within HEIs. This involves both a strategic drive to change from the university management and considerable time and effort by academics to redesign their courses. Most academics have little experience in designing for blended learning.

## 2.2. LEARNING THEORIES AND BLENDED LEARNING

The idea of learning has metamorphosed in several ways during the past century and has influenced significantly our educational practice and research. Mayer (1998) report that only three views of learning have emerged during the past 100 years of research on learning: learning as response strengthening, learning as knowledge acquisition, and learning as knowledge construction (p. 143). These three views are behaviorism, cognitivist, and constructivism. They represent broadly the major trends in the way learning is conceptualized and provide some distinctively different guidelines for instructional practice. Effective instructional models are typically based on learning theories. Mergel (1998) emphasises the fact that instructional designers must understand the strengths and weaknesses of each learning theory to optimise their use in appropriate instructional design strategies. Mayes (2004) states that for good pedagogical design, it is paramount to adopt a theory of learning.

Earliest learning theory was the behaviourism as professed by Pavlov (1927), and Skinner (1974). Behaviourists postulate that learning is a change in observable behaviour caused by external stimuli in the environment. Although it has the distinction of being the first truly psychological account of learning, the reasons for its failure is the kind of view it holds about the mind as a "black box" that totally ignores the possibility of thought processes occurring in the mind. Many educators argued that not all learning is observable and there is more to learning than a change in behaviour.

Vygotsky's (1978) professed a concept of learning that it is neither purely internal process, nor is it a passive shaping of behaviour. Realistic learning practices include a large range of activities, some active, some passive, some creative, some reactive, some directed, some exploratory (Hammond, 1992). Technology can also be successfully used for mundane drill, and practice in addition to providing the means or higher-level instruction, such as problem solving, and for increased learner control. Therefore traditional design will always have a place in computer-based learning environments as certain learning situations are best suited to prescriptive and defined learning environments.

Most learning theories are conceived for plain text learning and not for interactive and multi-sensory learning environments. A new learning theory called *connectivism* proposed by Downes (2010) and Siemens (2005). George Siemens presents *connectivism* as a "learning theory for the digital age" to explain the effect that technology has had on how we live, how we communicate, and how we learn. According to Perrin (2005) the theory of Connectivism combines "relevant elements of many learning theories, social structures, and technology to create a powerful theoretical construct for learning in the digital age."

Siemens (2005) argues that all the main learning theories were developed at a time when learning was not impacted through technology. Today, due to the information explosion, learning is not fully under the control of the learner; technology performs many of the operations such as information storage and

retrieval previously performed by learners. Accordingly, some knowledge will reside in machines while some will reside in humans. The challenge for educators, therefore, is how to design instruction for both machines and humans, and how the two can interact with each other.

Siemens believes that learning is more than knowledge acquisition and it must be aligned with the nature of flow of knowledge in the networked digital age. According to Siemens, knowledge exists in networks and learning is the act of developing and forming diverse, multi-faceted networks (Siemens, 2005a) suggests that because of the networked society, globalization, and the constant changes to information and new information, educators need to look at new ways to design learning materials. Though Connectivism focuses on preparing learners to function in the digital and networked age, all of which sounds befitting and exciting, the Researcher wants to believe that connectivism, however, has an important role in the development and emergence of new pedagogies, where control is shifting from the tutor to an increasingly more autonomous learner; therefore, further work needs to be done on how this theory can be used by educators to (re) design and develop learning materials and environments.

There are also several criticisms about Connectivism. For example, Bill Kerr (2007) argues that connectivism is an unnecessary theory; in his opinion, existing theories satisfactorily address the needs of learning in today's technologically connected age.

### 2.3. BLENDED LEARNING IN HIGHER EDUCATION ENVIRONMENT

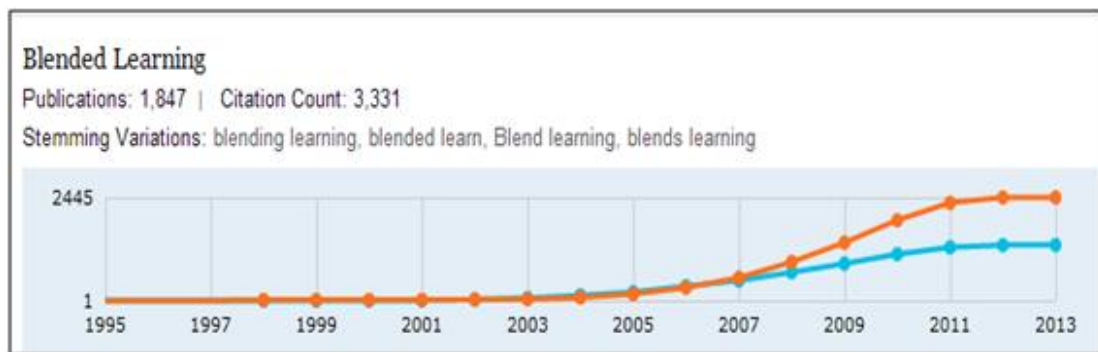
In recent years, an increasing number of definitions of BL have been proposed, and numerous studies have attempted to explain this term in different ways. Moreover, the term *blended learning* is being used with increased frequency, as this mode of learning is becoming a promising concept in the field of education. Therefore, as Driscoll (2002) stated, 'blended learning means different things to different people' (p.1). Furthermore, this concept is widespread in the pedagogical field, and has been extensively discussed by those interested in

learning environments over the past decade. Thus, a considerable amount of literature has been published on BL environments.

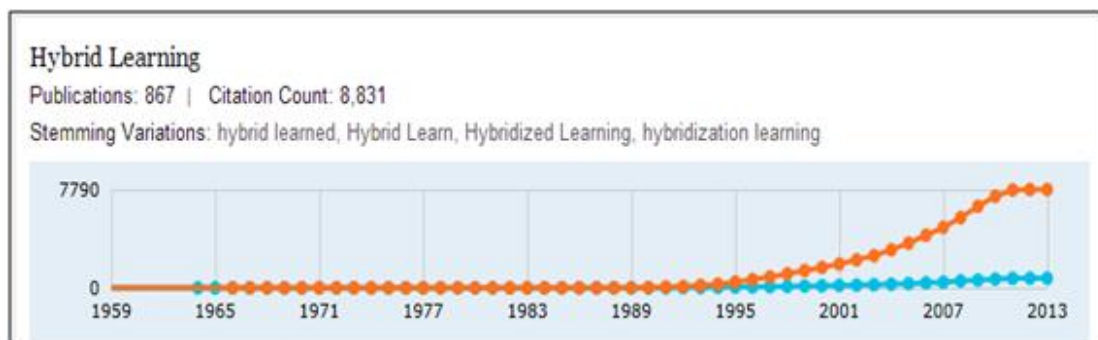
According to the American Society for Training and Development, BL is one of the top emerging trends in the knowledge delivery industry (Halverson *et al.* 2012). Furthermore, in her study, Chew (2009) searched for the term 'blended learning' using Google Scholar (<http://scholar.google.co.uk>) on 11 January 2008, and found 9,040 scholarly links; on 3 March 2009, she performed the same search and found that the number had increased to 16,300. In the present research, the same search was carried out on 9 June 2013, resulting in about 247,000 scholarly links – although it should be noted that many results were listed more than once and not all references can be considered academic findings. Still, such an increase in studies related to an emerging term over less than a decade is astonishing.

BL currently is referred by various names including hybrid learning, integrated learning, multi-method learning, technology-mediated instruction, web-enhanced instruction, computer-assisted learning, educational technology and mixed-mode instruction. The terms *blended learning* and *hybrid learning* have often been used interchangeably in recent literature and the same is done in this work.

A study by Halverson *et al.* (2012) investigated the large and growing body of literature on this topic in an article titled 'An Analysis of High Impact Scholarship and Publication Trends in Blended Learning'. The authors mentioned that BL researchers are interested in 'moving higher education from the 19<sup>th</sup> century to the 21<sup>st</sup> century' (Halverson *et al.* 2012, p.9). The research identified the 50 most cited articles focusing on hybrid or blended learning. Here, Garrison and Kanuka's (2004) article 'Blended Learning: Uncovering Its Transformative Potential in Higher Education' headed the list of the most influential articles, with approximately double the citations of other articles per year. Garrison and Kanuka's (2004) paper presents a discussion of the transformative potential of blended learning in the context of the challenges facing HE.



**Figure 2.1. Publication Trends Regarding BL (Microsoft Academic Research 2013).**



**Figure 2.2: Increase in publications Trends regarding Hybrid-Learning**

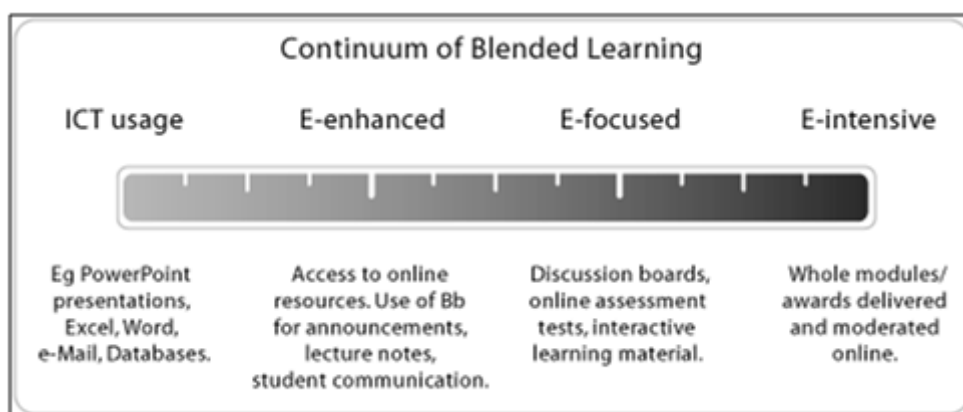
The 'Publication Trends' feature in the Microsoft Academic Search engine provides a clear vision of how publication interests have changed over time by giving an analysis of the publishing trends in academic fields and stacked area charts for the data. Figure 2.1 shows the increase in both publications on BL (using the search terms 'blended learning', 'blended learn', 'blend learning' and 'blends learning') and the citations of these publications (Microsoft Academic Research 2013).

Figure 2.2 demonstrates the increase in both publications on hybrid learning (using search terms 'hybrid learning'; 'hybrid learned'; 'hybrid learn'; 'hybridised learning' 'hybridisation learning') and the citations of these publications (Microsoft Academic Research 2013).

Whitelock and Jelfs (2003) reviewed three definitions of BL varying from ‘the integrated combination of traditional learning with web-based online approaches’ to ‘the combination of media and tools employed in an e-learning environment’ and ‘the combination of a number of pedagogic approaches, irrespective of learning technology use’ (cited in Green, Skinner & Blackey 2010, p.3). Moreover, Browning and Leffe (2004, p.44) defined BL as an innovative strategy that combines electronic and face-to-face learning.

Sherimon, Vinu and Krishnan (2011) stated that BL is a combination of traditional face-to-face classroom learning and emerging technologies like pervasive learning, virtual classrooms, online training, web-based study materials and so on. In addition, Staker and Horn (2012, p.3) identified BL as a formal education programme in which a student learns partly through the online delivery of content and instruction, with some element of student control over time, place, path and/or pace, and partly at a supervised brick-and-mortar location away from home. Moreover, Melton, Graf and Chopak-Foss (2009) defined blended learning as ‘a hybrid of classroom and online learning which includes some of the conveniences of online courses without the complete loss of face-to-face interaction’ (p.1).

Norah Jones (professor of education at the University of Glamorgan) has adopted a continuum of BL where the use of online media increases from basic ICT usage to intensive ICT usage (cited in Chew 2009; see Figure 2.3).



**Figure 2.3. The Continuum of BL (Chew 2009).**

Hybrid learning combines traditional face-to-face instruction and pure online learning (Shubin *et al.* 2010). A hybrid learning programme is a mixture of traditional in-class learning elements and e-learning components (Kim 2008). According to Zerbe (2010), 'hybrid learning' mixes various teaching techniques, learning styles and delivery methods. Typically, hybrid or blended learning combines classroom meetings and content delivered by technology, such as computer-based study or e-learning. By definition, in blended/hybrid courses and programmes, 30–79% of the course content is delivered online. 'Face-to-face' instruction includes those courses in which 0–29% of the content is delivered online; this category comprises both traditional and web-facilitated courses (Allen *et al.* 2007, p.4).

Whenever the concept of BL is discussed in this research, the following definition is assumed: 'Blended learning is the integration of physical world with the digital domain through a combination of different types of resources and activities with a range of learning technology in and out of the traditional classroom, where learners can interact and build ideas by mixing synchronous and asynchronous instruction based on the Internet and computer technology for full-time students'. *This definition was presented to the respondents at the beginning of the surveys.*

Blended learning has the potential to transform higher education (Haythorthwaite and Andrews, 2011). This is due to the combination of asynchronous writing, such as discussion forums and blogs, and face to face discussion, which helps students to develop deep learning, critical discourse and reflective thinking skills (Garrison and Kanuka, 2004).

Blended learning can facilitate a community of inquiry with its cognitive, social and teaching presence (Garrison & Anderson, 2003). The teacher's role or teaching presence is to manage the environment (in class or online) and facilitate learning. To do this effectively the teacher must understand the cognitive and social elements of both face-to-face and online asynchronous

communication. Face-to-face discussions can be spontaneous and enthusiastic while online writing can be reasoned and reflective.

One of the main arguments of BL is that learning should take the form of an interactive dialogue and no one medium is perfect for it – hence the need for a mixture of media. The e-moderation model is perceived to be valuable as it focuses on the introduction of online media onto the course.

Gilly Salmon's e-moderating model (Salmon, 2000), describes a five-stage process, engaging the student with online communication technology. It is based on a principle that there are certain things that have to exist in order to achieve the effective operation of the learning via technology. One underlying issue here is the use of activities, to make students interact with each other and the E-moderator, rather than only accessing information such as handouts and presentation material.

One drawback of the E-moderating model is its prescriptive nature. Lisewski and Joyce (2003) argue that in practice there is a need for flexibility not provided by this model. The application of this model to blended learning is limited, as the face-to-face aspect is not incorporated in this framework.

Diana Laurillard applied the underlying ideas of dialogue as proposed by educators and psychologists to teaching and learning such as Pask (1976) and Ramsden (1993). The conversational framework depicts the communication process, which occurs between the lecturer and student in the development of student's knowledge (Laurillard, 2002).

### 2.3. ADVANTAGES AND DISADVANTAGES OF PURE ONLINE AND BLENDED LEARNING

In the BL literature, the most common reason provided is that BL combines “the best of both worlds”. While there is some truth to this, it is rarely acknowledged that a blended learning environment can also mix the least effective elements of both worlds if it is not designed well. Beyond this general statement, Graham et



al. (Graham, Allen, & Ure, 2003, in press) found that overwhelmingly people chose BL for three reasons: (1) improved pedagogy, (2) increased access/flexibility, and (3) increased cost effectiveness.

Increased flexibility and better access to learning materials is an obvious advantage as well as the cost effectiveness. BL 's influence on pedagogical practices cannot be discounted. It is no secret that most current teaching and learning practice in both higher education and corporate training settings is still focused on transmissive rather than interactive strategies. Some have seen blended learning approaches increase the level of active learning strategies, peer-to-peer learning strategies, and learner centered strategies used.

Although this study relates specifically to courses that are blended in terms of their online and face-to-face elements, a number of noteworthy studies have specifically treated the online element. Dziuban and Moskal (2011) found that in BL, students pay much more attention to the overall educational experience and less attention to the individual aspects of a course as identified in the rating questions. One explanation for this – which the present author supports – is that they might contextualise the individual items for the online and blended environments without using their face-to-face experiences as a standard for comparison.

Blended learning has also been identified as problematic in some respects. Gansler (2007) found that online courses present a problem for some students, who are concerned that employers may believe that graduates from pure online learning courses are less capable than others (see Skelton 2008). There is also a concern from education experts that online learning fosters 'passive' rather than 'active' learning, and as Grandzol and Grandzol (2006) stated, 'Passive learning should not be the sole, or primary, model for collegiate business education' (p.4).

Moreover, as Harnisch and Taylor-Murison (2012) pointed out, students may be more reluctant to engage with university tutors in an online environment. In their study, module tutors spent time chasing students to remind them of

deadlines and ask about their progress, whereas students reported that they found no reason to communicate with their tutors, as they had all the support that they required in class.

White and Sykes (2012) also found that there are differences in the way students and tutors interact in face-to-face and online environments. A number of students used comments to interact amongst themselves in a virtual environment, but when they interacted with the tutor within the same environment, they did not receive a response. Some students in Harnisch and Taylor-Murison's (2012) research also reported that they 'lacked confidence' when it came to contacting their university tutors because they did not know them well. This study also showed that students were well supported in school by tutors, but that in order to facilitate effective communication and reduce barriers to transition, students need to be prepared for a wider range of skills when studying in HEIs, for example, to facilitate communication through the tasks and lessons learned. Indeed, these researchers reported that HE students' responses were most positive and attrition was lowest where students were able to identify synergy between their in-school curriculum and the module, as they saw knowledge development as something that they could apply in their current studies.

Student achievement may also improve in an online environment. Bekkers *et al.* (2010) found that working through their blended learning programme, Stemming the Tide of Antibiotic Resistance (STAR) can lead to greater results regarding students' educational programmes, as well as increasing self-confidence and changing the prescribed behaviour of some participants. Participants reported that being better informed and having learned or refreshed specific communication skills contributed to the goal of the learning programme. White and Sykes (2012) looked at four cohorts that had undertaken a blended module structure. The assessment results indicated a trend of improvement in multiple-choice exams. However, Cooner (2010) found that in a BL environment, assessment weightings could differ according to whether the element of assessment is online or undertaken in a more 'traditional' manner.

Here, assessment marks for the BL module did not reflect the work the students completed because it only represented 20% of their overall mark. The author suggested that a fairer balance would provide at least a 50% weighting. If we are to use technology-enhanced learning, then the assessment methods must also be adapted to incorporate these changes. Where external professional bodies are involved in accrediting programmes, it is necessary to allow for time to introduce changes to module assessments, as this can be a complicated process.

Grandzol and Grandzol (2006) outlined that 'faculty members' presentations or lectures, lacking of any further interaction, not higher education but only a form of information delivery' (p.4). Thus, a simplistic content delivery model will suit a web-based e-learning system, but may not embrace the necessary complexities of learning (Quinton 2006). Various issues related to course delivery methodologies in an academic environment have been highlighted in relation to course developers' and students' perspectives regarding these methodologies (Sun Flight Avionics 2005). From the point of view of course developers, digital books offer a better method of accessing up-to-date material, as the printing and distribution process for traditional books requires an excessive amount of time.

Consequently, the use of digital methods greatly reduces delay and the students are provided with the latest textbooks without a high cost. From the student's perspective, compared to the traditional expensive textbooks costs, the inexpensiveness cost of digital textbooks more than offset the requirement to purchase a laptop computer (Sun Flight Avionics 2005). Thus, as pointed out by Cooner (2010), the use of educational technology can help to overcome a number of obstacles to effective learning in large groups by providing flexibility for learning, engaging exercises and context-specific activities which allow students to relate both personally and professionally to the material. Nevertheless, rather than simply seeking to 'deliver knowledge', the use of technology within the design should be focused on exploring ways in which the activities can enhance the students' learning experiences through the constructivist principles of 'emergent learning'. This means that the student

brings their individual history, information and experiences into the learning encounter, and learning is 'emergent' instead of 'given' or 'discoverable'.

Cooner (2010) also stressed that at the time of writing, the tutor alone was responsible for the design, creation and teaching of BL modules. Possession of the proper technical and content knowledge in the pedagogic framework enabled the tutor to adapt the necessary tools and approaches for students to learn; however, this also put pressure on a lone tutor to provide the level of response and interaction required by students of online or BL courses.

As Heanessy and Deaney (2004) observed, 'integrating ICT is a gradual, reflective process for most teachers and one that is influenced by a complex mix of factors. In particular, effective practice involves developing new forms of pedagogy' (p.1). However, a problem could arise in that 'new technologies may be used inappropriately or in ways that replicate teacher centred approaches and thus may contribute little to improving the quality of the learning environment' (Torrissi-Steele 2002). A study conducted by Hye-Jung and Cheolil (2012) demonstrated that students clearly differentiated quantity contributions from quality contributions. In a BL module evaluated by peers, students perceived informative messages, such as resources or references, as being related to the quantity of the work, whereas intellectual messages, such as an individual's own ideas, opinions or thoughts, were related to the quality of the work. Although the students considered intellectual messages to be related to the quality of their teamwork, in their comprehensive evaluations, they valued social and managerial contributions more highly than cognitive ones.

It has been widely recognised as undesirable to apply new technology in learning environments in order to reproduce previous practices of learning and teaching (Lipponen, Lallimo & Lakkala 2006). As Tamashiro (2004) stated, 'Flexibility of time to work is the most frequently nominated advantage to online learning, and lack of face-to-face, personal or social contact with instructor or students, is the most frequently nominated disadvantage' (see Mahmud 2013, p.233). To make the most of the advantages that online learning brings, it is recommended that

the learning environment should include 'a media rich, highly social atmosphere with extremely high levels of user engagement'. Moreover, 'it is a point playing field for a wide range of individuals including those with disabilities' (Safara 2008, p.3). Interestingly, pure online learning courses may be less well received by students than BL courses which retain some form of face-to-face teaching while taking advantage of e-learning (Lee & Chan 2007, as cited in Chia-Wen, Pei-Di & Meng-Chuan 2011). Chia-Wen, Pei-Di and Meng-Chuan's (2011) study showed between 70.27% and 80.56% agreement amongst students that blended learning is a 'very helpful' approach for learning.

Online learning element is delivered is vitally important. Within HE, there appears to be the need for a well-developed ICT infrastructure to support both staff and students to enhance their performance and achievement.

#### 2.4. THE INFORMATION AND COMMUNICATIONS TECHNOLOGY INFRASTRUCTURE OF BLENDED LEARNING IN HIGHER EDUCATION

With the revolution in communication and information technology, countries are accelerating the pace of innovation with collaboration, and this has had a great impact on scientific, cultural and social progress and development. Thus, it has become necessary to make education a priority in programmes and policies. As a result, new universities are frequently being opened worldwide with the latest count on total number of universities globally is 16000 as World List of Universities, 25th Edition: And Other Institutions of Higher Education and (Alrtimi 2008). The composition and sequence of learning activities that relate to different delivery modes – online and offline, synchronous and asynchronous – have developed along with learning solutions that use a mixture of e-learning and face-to-face instructor-led courses. Hence, BL is becoming a better, more suitable learning environment through the efficient alignment of IT with the syllabus to establish a modern learning method that fulfils the main objective of students, comprehensively re-engineers the traditional teaching process and educates larger numbers of highly qualified personnel (Rhema & Miliszewska 2010, p.2).

Institutions have had to respond to such challenges by enhancing the quality and relevance of learning offerings through the development of learning theory and digital media to bring about the academically motivated integration of ICT in teaching, learning and student collaboration. This requires the establishment of IT-based infrastructures for education, in association with critical reforms in education and organisational culture (Lanestedt & Bygstad 2003, p.1). Thus, for blended learning to be useful and beneficial, a sound and stable IT infrastructure is required (Steffens & Reiss 2010); this will have a positive effect on all aspects of the university environment, including admissions, registration, teaching, learning, accounting, facilities and security.

New technology increases the potential for constructivist learning processes. The instructional methodologies that were difficult to implement due to the inability to provide the much-needed individualized attention to students, have now become more practical with recent advances in information and communication technologies. Some of these technology tools are email, discussion forums, conferencing, web sites, search engines, etc. According to Melloy (1997) a fascinating synergy can emerge between learner-centred and collaborative models and instructional technologies.

Further, technology has the potential to expand the breadth and depth of the curriculum to a great extent; for example, students can now access information far beyond the scope of their instructors and traditional textbooks. Curricula can be customised to students' specific learning styles. Instructional technology has the potential to enhance knowledge construction and to equip today's learners with the kind of skills required for all aspects of their lives, rather than just focusing on content mastery, thus bringing about a transformation in the higher education landscape.

## 2.5. E-INFRASTRUCTURES

The term *e-infrastructure*, as used by the Joint Information Systems Committee (JISC), embraces networks, grids, data centres and collaborative environments, and can include supporting operations centres, service registries, single sign-on, certificate authorities, training and help-desk services (JISC n.d., Para. 2). The E-Infrastructure Reflection Group (e-IRG) outlined that the main objective of the e-infrastructure is to support the political establishment, technological and administrative framework for the convenient and inexpensive shared usage of electronic resources throughout Europe, with particular care directed across networking, storage and grid computing. Moreover to the e-IRG, *e-infrastructure* suggests a new research environment in which ‘all researchers – whether working in the context of their home institutions or in national or multinational scientific initiatives – have shared access to unique or distributed scientific facilities (including data, instruments, computing and communications), regardless of their type and location in the world’ (e-IRG n.d., Para. 4).

Billings (2008) described e-infrastructure as composed of hardware, software and connectivity. *Hardware* includes servers, desktop computers, laptops, BlackBerries, cell phones, routers and switches. *Software* comprises operating systems, productivity tools, e-mail, web browsing, wikis, blogs and games. Finally, *connectivity* refers to local area networks, wide area networks, Internet, phone lines, fibre optics and wireless (p.3).

Dirk’s (2010) study stated that there are two major areas covered in the infrastructure of BL. First, there is the production infrastructure, which includes staff, facilities and other assets and tools that help to generate educational tools (contents, utilities, etc.). With regard to BL in HE, this includes the people who produce the contents and the financial resources for related budgets. Second, the infrastructure helps to align educational activities in order to coordinate amongst all people related to the educational processes (e.g. students, instructors, stakeholders, institutions and public funding agencies) and to

coordinate the processes (e.g. content development, IT support, learning, teaching, etc.; Steffens & Reiss 2010).

Across several selected studies, we can see that a new set of common e-infrastructure functions and specifications is emerging, which in turn will allow for higher-level, innovative applications to be developed, as well as compatibility, modularity, capability, scalability, availability and rich features which allow large-scale, high-volume learning anywhere at any time. Conversely, poor e-infrastructure may cause and result in very long login times with complex objects, graphics, video and text in synchronous and asynchronous learning via virtual classroom technology.

## 2.6. GLOBAL TRENDS IN BLENDED LEARNING – RELATED WORK

This section discusses how the concept of blended learning is being perceived, accepted and practised within higher education sector with a view to justifying the relevance of this study. Specifically, it reviews current global trends in higher education with regards to blended learning, describes the blended learning practices, the benefits of blended learning, and the challenges to its implementation.

It is widely believed that integrating technology with conventional teaching practices can have a synergistic effect because it can improve teaching and learning by maximising the strengths and minimising the weaknesses of each component (Diaz, 2010; Davis and Fill, 2007; Kim and Bonk, 2006).

Institutions of higher education around the world are using blended learning to meet institutional goals, enhance student learning, facilitate student access and find solutions to address diminishing resources. As a result, blended learning has garnered a great deal of attention from education, particularly the higher education landscape, around the world as an opportunity to improve the



teaching and learning process. Millions of learners around the planet, in fact, are actually learning in this fashion each day (Bonk and Graham, 2012).

Due to its increasing popularity and acceptance, a wide variety of blended learning models are described in the literature (e.g., Singh, 2003; Yoon and Lim; 2007; Thorne, 2003; Bonk and Graham, 2012),

A survey of instructors from higher education institutions across Britain found that 85 percent believe learning technologies are improving access to education and 94 percent think that a mix of online and classroom-based teaching is more effective than classroom teaching alone (Marquis, 2004).

In the UK, HE plays a very active part in ICT. This country is often a world leader in networking, content and digital libraries, access management and many areas of e-learning, and has recently provided an e-infrastructure for research and e-science (Cook 2009). Colleges and universities in the United Kingdom are inspired by the innovative use of digital technologies. In the following, some examples are given of the current UK e-infrastructure funded by JISC, the UK e-Science programme and joint initiatives involving JISC and Research Councils UK:

- **SuperJANET 5:** ‘The SuperJANET 5 programme means that primary and secondary schools, colleges and universities can communicate and collaborate securely and reliably’ (JISC n.d., Para. 1); it includes an integrated information environment, virtual research environments, digital repositories, core middleware infrastructure and technology development, a semantic grid and autonomic computing, shared services and support for e-research and the e-science community projects of Astrogrid, e-Minerals, Geodise, Gridpp, myGrid, NDG and RealityGrid.

Among the European countries, Sweden is viewed as the highest-ranking country for ICT, with the top rank in the latest edition of *Measuring the Information Society*, which features the new ITU ICT Development Index (ITU 2010). Susanne Kjallanders’ study (Source: *studera.nu*) found that Sweden has been considered a

world leader in ICT in education for a long time, and all schools in Sweden have had computers and Internet for many years.

In 2003, a foundation for the use of ICT was essentially in place in Sweden, and since that time, all universities have had access to computers and the Internet. For many years, Swedish universities have been offering courses in e-learning layout in two modes of e-learning – Internet-based study and decentralised study. In Internet-based study, courses are offered through the Internet with little contact or no face-to-face interaction, while in decentralised study, the students meet at regional mini-campuses or study centres (Demiray 2010, p.866).

With regard to the adoption of technology-enhanced learning, as Hay, Peltier and Drago (2004) stated, 'Although on-line learning is gaining prominence globally, the USA is currently more advanced than other countries such as the UK' (p.170). In the US, over 3.5 million students had participated in online learning at HEIs by 2006. The Sloan Foundation reports showed an average increase of approximately 12–14% per year in enrolments in e-learning in postsecondary institutions in the US between 2004 and 2009, in comparison with an average increase of around 2% per year in enrolments overall.

According to Seamen (2007), about 25% of all students in HE had taken fully online courses in 2008. Moreover, Ambient Insight Research reported that 44% of postsecondary students in the US in 2009 had taken some or all of their courses online. They also expected that the proportion would be around 81% by 2014. Hence, one can say that e-learning is increasingly becoming a predominant form of tertiary education, at least in the United States (United Nations Convention to Combat Desertification [UNCCD] 2010, Para. 5).

The USA National Educational Technology Plan (NETP) of March 2010 (U.S. Department of Education 2010) gave a model of 21<sup>st</sup>-century technology-based education. Among its objectives are collaborative teaching strategies as compared with traditional instructor-led classrooms; professional e-learning;

interactivity, suitability and continuity; and opportunities for cooperation provided by online environments. It includes objectives and recommendations in five important subjects: learning, assessment, teaching, infrastructure and productivity. We will focus on the NETP infrastructure among the necessary parts of the 21<sup>st</sup>-century educational model, including thorough and complete infrastructure provided to each student and instructor, as well as resources incorporated at each level of the learning system whenever and wherever they are needed.

The most important issue is that people, processes, educational resources, strategies and sustainable models for continuous improvement are included in the infrastructure, as well as broadband connectivity, servers, software, management systems and administration tools. Establishing such an infrastructure requires a project with wide coverage, demanding combined and coordinated effort (U.S. Department of Education 2010). Although technology has been adopted in several parts of learning, it is vital to have a comprehensive infrastructure to be able to move beyond the traditional model of classrooms with instructors and students to a teaching model that gathers teachers and students in classrooms, labs, libraries, museums, workplaces and homes – from any computer in any place in the world where the user has Internet access (U.S. Department of Education 2010).

The rapid advances in computers and communications over the last four decades have provided strong technical capabilities for education. Nowadays, Internet access is cheap, tools are user friendly and websites provide informative data and course contents. All provide the capability to bring together online education activities beyond policies, limits and traditions (U.S. Department of Education 2010). The public learning system has already utilised many of the abovementioned resources. Nevertheless, there is an urgent need to transform technology-based learning. There is a simultaneous push from the evolving technology and a pull from the nation's need to enhance the learning system (U.S. Department of Education 2010).

Researchers at Carnegie Mellon University state “by combining the open-learning software with two weekly 50-minute class sessions in an intro-level statistics course, they found that they could get students to learn the same amount of material in half the time.” It is the immediate and targeted feedback that leads to this significant reduction in the time it takes students to achieve a desired level of performance.

Aycock et al. (2002) report on a research at the University of Wisconsin-Milwaukee that they found that both teachers and students were positive about the blended approach- with 100% of teachers recommending the approach to others and planning to teach again using the hybrid model; the main reasons were, “student interactivity increased, performance improved, and the faculty could accomplish course goals that had not been possible in their traditional courses”; substantial majority (80%) of their students thought the hybrid model was worthwhile, and that they would recommend a course offered in the hybrid mode to others.

More recently, many colleges and Universities particularly in the western world consider blended learning as an option to ensure continuity of learning in their contingency plans against unexpected closure of their physical campus in case of campus security threats or other natural disasters such as flood, fire or epidemics (e.g., possible H1N1 virus pandemic).

Further concerns about the traditional campus education as expensive, ineffective and inexplicably irrelevant to address today’s workplace needs need to be addressed with new innovative instructional strategies and models especially in the context of the recent downturn in the financial sector. The blended learning approach aims at providing increased access and flexibility in a cost-effective manner to even those who otherwise will not have had access to HE. Thus, it can offer immense help in student learning, allowing us to attain higher education for more people, if not all more effectively and efficiently

There is a need to conduct studies in various countries to investigate possible cultural and individual differences as well as different educational approaches and goals. For instance, Teo, Lim, and Lai (1999) examined perceived ease of use, enjoyment, and usefulness using TAM related to the World Wide Web in Singapore. Their results found to be consistent with TAM applications in North America. However, Park (2009) in a similar study in higher education of South Korea found that neither perceived usefulness nor perceived ease of use had a significant direct effect on behavioural intention to use e-learning. This result, according to Park (2009), is possibly explained due to high Internet skills and self-efficacy of Korean students, which is not always the case in other countries. Moreover, Keller et al. (2007) conducted cross-cultural study exploring the implementation of e- learning environments in the frame of a master course in public health education offered in Sweden and Lithuania. They report *“Lithuanian students were found to experience a substantially higher degree of acceptance of e- learning environments than Nordic students at the Swedish university”* (p.395). In addition, the study findings of Keller et al. (2007) revealed *“Lithuanian male students experienced a lower degree of perceived usefulness of the e-learning environment than Lithuanian female students”*. Keller et al. (2007) emphasize on the key role of *“cultural and organizational”* aspects towards acceptance of e-learning initiatives from students (Keller et al., 2007, p.395).

## 2.7. ENCOURAGING EFFECTIVE BLENDED LEARNING – THE ARAB CONTEXT

As discussed in the previous section, studies into effective BL are most frequently applied to a Western context, as a significant body of literature relating to the Arab world is lacking. Developments in the adoption of education technologies in the Arab world reflect those in the West, where the adoption of e-learning is now informing the long-term strategic thinking of many HEIs (Kim & Bonk 2006). While this may be unsurprising given different rates of adoption of technology-enhanced learning and different models of HE in various countries, there is a need for studies that consider effective BL in a variety of cultural contexts to reflect the communities it serves. Moreover, more insights into factors and approaches, which can improve connections between the virtual and physical

elements of blended courses within universities, are urgently needed in Saudi Arabia (Badawi 2009).

While BL is now increasingly adopted by HEIs, its growth is not consistent even in the West, where its development is more advanced than in the Arab world. There has been rapid growth in online education offered by HEIs in the United States since the early 1990s, which is likely to continue for the near future (Lee & Nguyen 2007). Differences also exist in models of HE in various countries across the world. The UK model of HE, also found in Australasia, is typified by a 'devolved learning and teaching system ... ultimate responsibility for the quality of learning and teaching rests with the faculties' (Ellis *et al.* 2007, p.9), differing from the top-down model evident in KSA. Moreover, despite the top-down commitment of government and support of people in senior positions to encourage better integration of learning technologies in HEIs across KSA, the traditional didactic, lecture-based classroom remains the standard in Saudi public universities, with only a few programmes implementing distance learning (Alebaikan & Troudi 2010, p.4). In this respect, developments towards e-learning in KSA also reflect those in the West, where just over 10 years ago, Lueddeke (1999) noted that 'in most universities, teaching continues in much the same way as it has always done [and] the lecture remains supreme' (p.241). An understanding of the dynamics of interaction between education, business, industry, management and Internet and web technologies is required for the 21<sup>st</sup> century (Hussain & Tahboob 2007).

As with other developing countries, the major obstacle in Saudi Arabia for developing industrialisation is a lack of personnel trained in the technological and information fields. Therefore, extensive education programmes have been created and implemented in new institutions for computer education (Al-Wakeel 2001). Al-Mohysin (2008) argued that e-learning should not be confined and constrained by technology transfer, but should instead be installed with an understanding of practice and application. He stated that the use and design of software, curricula and e-libraries that are suitable for development of the

national educational policy requires the availability of a local technology industry and the creation of national leaders for its implementation.

One of the problems that we face in this century is that, despite the enormous amount of accumulated information now available to us, we tend to lack sufficient knowledge on how to access all this knowledge and the technology, which will meet the human need to contribute to and maintain a good social and environmental balance. To achieve this, it is necessary to foster cooperation between researchers and scientists from various universities to solve society's problems in a global context and to create a dialogue between different cultures to facilitate the exchange of experiences and benefits (Sadah & Sartawi 2007, pp.240–241). Thus, e-learning should be investigated as a relatively new emerging technology that spans universities and other institutions and concentrates on utilising the lecturers' knowledge so that academic courses can be delivered anywhere and at any time (Shehabat & Mahdi 2009).

It is now very easy to obtain information through the Internet. Courses can be provided online and lectures notes can be made available for download through websites provided by various educational institutions. However, this method of teaching can still involve problems, especially in subjects where laboratory classes are essential to the understanding of theoretical notes; this is difficult to replicate in an online environment (Benselama, Hennache & Ben Saleh 2009).

The plethora of studies examining good practice in terms of encouraging effective BL remains dominated by examples from the West. Thus, there is a need for studies that consider effective BL in a variety of cultural contexts, reflecting the various communities being served. It is also important to note that there are many technological and non-technological factors affecting the student learning experience, and not all of these have yet been fully reconciled in Western nations which have embedded e-learning. For example, Young, Klemz and Murphy (2003) found that the influence of technology on learning outcomes was secondary to other, non-technological learning factors, an outcome that

contradicted the findings of previous studies looking at the effect of technology in isolation on other, non-technological factors.

A study by Byrne, Flood and Willis (2002) compared the approaches to learning amongst domestic (Irish) students and overseas students and found that 'a significantly lower number of overseas students adopted an instrumental approach compared to a deep or strategic approach ... Possible explanations offered for this difference were students' ages, their prior educational experiences and their year of study' (p.27).

US students have been found to rate the educational experience higher than UK students, and also evidence higher use of reflective thinking practices compared to UK students (Peltier, Hay & Drago 2006). Another difference is that in the US, important variables, which factor into student choice of place of study, are location, academic reputation, programme of study and employment opportunities (Moogan & Baron 2003). Once at a place of study, 'factors related to the physical environment in which the course is conducted, the course topic, and the course execution, in addition to the instructor's personality, are significant influences on students' attitudes toward their classes' (Curran & Rosen 2006, p.135). In the UK, on the other hand, the main criterion affecting student choice is the programme of study; yet, a personal visit to the location prior to finalising a choice is deemed 'crucial' (Moogan & Baron 2003, p.275) if students wish to commute to university from the parental home.

A study by Adeoye and Wentling (2007) found that various cultures have differences preferences, satisfactions and understandings when considering of the usability of e-learning systems. Research on e-learning in Jordanian universities found that its success depends on students' ability, in particular their competence and knowledge relating to using this technology, as well as the ability of faculty members to provide this type of modern education and universities' capacity for infrastructure. Using e-learning successfully is a goal for all universities in Jordan. They have taken significant steps towards infrastructure development, creating computing and information centres on



college sites and in the offices of faculty members, and have also initiated steps to link Jordanian university libraries together electronically (Hajaya 2010). Below, specific issues regarding the ICT infrastructure and development of e-learning in various Arab countries are highlighted.

### **2.7.1. The United Arab Emirates**

Although the United Arab Emirates (UAE) telecommunications sector is the most highly developed in the Arabian Gulf region and constitutes an extraordinary case of rapid development, the implementation of e-learning in most educational institutions is far from complete due to the IT infrastructure. Therefore, a set of strategies has been set by the federal government because of the urgent need to implement the most current educational technologies to improve learning and teaching methodologies in all stages, from primary education to HE (Demiray 2010, p.1014).

### **2.7.2. The Kingdom of Jordan**

A study was conducted by Nael Hajaya (2010) in the Kingdom of Jordan to investigate the reality of e-learning at some Jordanian universities. One of the key objectives of this study was to ascertain the availability of infrastructure for e-learning, along with the assimilation of faculty members in universities to e-learning usage requirements. The results of a questionnaire given to 110 faculty members at Tafila Technical University and Al-Hussein Bin Talal University showed that faculty members were least satisfied with this infrastructure, and the e-learning infrastructure is still at the lowest level. The study attributed these results to the long distance between the universities and the centre of activity in the capital, weakness of financial resources, the recent establishment of these universities, lack of classrooms prepared for e-learning uses, lack of integrated educational software and lack of computer laboratories and technicians (Hajaya 2010).

### **2.7.3DS. The Saudi Arabian Context**

The world is taking rapid steps concerning the utilisation of technology and its application in education. KSA is not isolated from this process, and in recent years, the Kingdom has engaged with extensive development in the use of advanced educational technology, facilitated at least in part by the educational budget in this country, which is the largest in the Middle East. In December 2012, the government of Saudi Arabia announced its annual budget for 2013. At about \$221 billion, this was the largest budget in the kingdom's history and represented a 21% increase on the 2012 allocation, the highest increase since 2007. The importance of education to the Saudi government has been reflected in the budget allocation, especially in the last decade. The Kingdom has established a number of universities and supported several educational projects, such as the King Abdullah Project for the Development of Public Education; it has also established NCEL through the Ministry of Higher Education (Aljahni 2008).

Education and health care remain at the centre of attention of Saudi government spending, accounting for 37% of the total budget. Education has the biggest share of the budget, at 25% of total spending, followed by the health and social affairs, at 12.2%. The HE allocation included \$3.6 billion for the Saudi Electronic University. In addition, an estimated \$1.1 billion was allocated to build three new college hospitals, in addition to 15 new colleges, and further work is to be undertaken on the construction of facilities at newly opened universities (USSABC, 2013). To adapt to the orientation of both the Saudi and international labour markets, the Ministry of Higher Education has adopted radical changes which have led to a new restructuring of the universities. This has been achieved across a wide range of programmes, including short-, medium- and long-term plans to address a number of key issues such as acceptance and assimilation, harmonisation, quality, finances, scientific research, scholarships and strategic planning (Al-Anqari 2008).

The demand for HE is expected to increase in the near future due to the changes in demographic factors, economic and social variables. Statistics show high

growth rates among the youth segment of the population. Studies by Quraishi (2012) and Alebaikan and Troudi (2010) drew attention to the fact that about 60% of the Saudi population comprises young people aged 20 years or below, and this young population will increase by a third every eight years. Consequently, this demographic is expected to be involved in the public education system in the coming years. In 2009, the CDSI in Saudi Arabia estimated that the Kingdom's 2008 population was 24.81 million (Saudi Arabian Monetary Agency 2009). Recently, the CDSI showed that the population in 2012 was more than 29,000,000, with 2.90% population growth (CDSI 2012).

Consequently, in recent years, the number of universities and colleges has increased through the geographically distributed emergence of new HEIs in the Kingdom. Currently, there are 25 public universities and 26 private high-capacity universities and colleges spread around the Kingdom to meet the growing demand for HE in the country. These are all linked to the Ministry of Higher Education, but enjoy a high level of independence in both their administrative and academic functions.

The relationship between HE and the development of society has become crucial, not least because of education's role in social and economic development. KSA has adopted a national vision of educational development connected to the prospects for urbanisation, and has been committed to improving education since Shariah College was founded in Makkah in 1949. Fourteen students graduated from the college's Faculty of Sharia-Islamic Law in 1952 (Umm Al-Qura University [UQU] 2007). By the 2009 academic year, the number of graduates from all of the Kingdom's HEIs had grown to 87,155. At the end of 2012, 137,119 HE students graduated from public and private universities (Higher Education Statistics 2013).

Comprehensive development works are taking place across KSA in all fields. There have been a series of changes in HE, including input from private finance and foreign competition. The fluctuating requirements of the labour market have been recognised by those working in HE, who have been preparing for future

changes through advanced and detailed planning. This has resulted in expansion, self-evaluation, the initiation of programmes and the creation of organisations that focus on local and global endeavours. The most prolific establishments include the National Centre for Assessment in Higher Education (Qiyas), the National Commission for Academic Accreditation and Assessment, the Higher Education Statistics Unit, the Geographic Information Systems Project, the Saudi Centres for Research Excellence, the University Academic Associations Development Project and the Higher Education Research Centre. There has also been stimulation of contributions to private education through scholarships for foreign study and the development of the National Centre for E-Learning and Distance Learning Project (Ministry of Higher Education n.d.).

## 2.8. THE DEVELOPMENT OF E-LEARNING AND DISTANCE EDUCATION IN THE KINGDOM OF SAUDI ARABIA

According to SAGIA (n.d., Para. 3), Saudi Arabia is the largest information and communication technology market in the Middle East. Thirty per cent of the Middle East's ICT and Internet spending comes from Saudi Arabia (AlMegren & Yassin, 2013). In this context, the Saudi government began to implement modern educational reforms in the last decade as a response to the current and future demand for educational and ICT infrastructure. Therefore, the Saudi government recognises that students deserve instruction that prepares them and their country to succeed in a world of rapid change and extensive globalisation. Hence, a comprehensive development programme has been developed and funding has been provided to establish e-infrastructure to ensure that most universities have the necessary technological infrastructure to practice good e-learning. In 1996, the Ministry of Education established the Computer and Information Centre (CIC) to provide schools and educational institutions with a wide range of ICT services (Oyaid 2009). The desire to enhance the e-learning and distance learning programmes in Saudi HE is supported by many projects, such as King Abdullah Project for the Development of Public Education and the NCEL.

The Saudi government believes very strongly in the importance of education in the lives of individuals and the country in order to help them progress and achieve prosperity. This can only be done by keeping pace with evolving educational technology, which is why the King Abdullah Project for the Development of Public Education was founded. This depends on the following four steps: (1) the development of educational curricula; (2) the rehabilitation of teachers; (3) the improvement of the learning environment; and (4) the establishment of non-curricular activities, including the preparation of digital curricula, e-books, elements of the educational curriculum and building standards of integration of technology into the educational curriculum. All of these elements have been added to the development of the curriculum from kindergarten to high school for more than 5 million students. The cost of this initiative is approximately SR 11,203,100,000 (\$ 2,987,172,178; Aljahni 2008).

Saudi Arabia has been slower than many nations to move into distance education. The Kingdom has had a very short history of using printed, electronic, or broadcast means for students who are not physically on site Saudi Arabia has been slower than many nations to move into distance education. The Kingdom has had a very short history of using printed, electronic, or broadcast means for students who are not physically on site.

Recent developments in Saudi distance education is demonstrated in the establishment of the Deanship and Faculty of Distance Learning at King Abdulaziz University in Jeddah, designed to provide distance learning in the western region of the country. Many programs offered involve blended learning, the virtual classroom system (CENTRA), which provides lectures over the Internet and the e-learning management electronic system, which facilitates interaction between students and faculty. Similarly, Al-Imam Muhammad ibn Saud Islamic University and Princess Noura University, which mainly caters to Girls/women offer distance education in large scale. These examples show how distance learning methods and technology can be used to improve higher education opportunities and facilities for female students included.

Like most Arab countries, Saudi Arabia has yet to authorize alternative providers, such as private institutions or virtual universities. Arab Open University is an exception and opened branches in Saudi Arabia, Bahrain, and Egypt and has been accredited by the Ministry of Higher Education and National Commission for Academic Accreditation and Assessment (NCAAA).

Students learn via the Moodle-based learning management system, interactive multimedia lectures, face-to-face lectures and practical sessions and study texts. The lectures are also made available via DVDs, streaming video, and video formats for portable devices such as mobile phones and iPods.

Computing facilities and wireless Internet access are available in all of the regional centres, which are equipped with separate labs for male and female students. Most of the classrooms are also equipped with instructors' PCs, multimedia kits, and video-conferencing equipment for teaching and intra-branch meetings and male-female closed circuit TV transmission. There are currently plans to equip students with state-of-the-art laptops.

The Arab Open University subscribes to a number of world-class digital libraries and these online resources are also accessible to the students through the learning-management system. Arab Open University enrollees must have successfully completed their secondary education, be proficient in English, and able to afford the relatively high fees. Collaboration, partnership and licensing agreements between the Arab Open University and the U.K. Open University allow it to adopt and adapt U.K. learning materials for its own use, be accredited by U.K. Open University Validation Services, and award its own degrees.

However, Arab Open University degrees are not universally recognized throughout the region, even in Lebanon, despite the school having one of its branches there and having established quality assurance units in all of its branches (Abouchedid & Eid, 2004).

Another interesting development has been the launch of the Knowledge International University, the first virtual university in Saudi Arabia. Knowledge International University, or KIU, is a non-profit, Islamic, virtual university offering bachelor-level degrees programs from the College of Sharee'ah and Qur'an studies and the College of Islamic Studies for non-Arabic Speakers (Al-Khalifa, 2009)

In Saudi Arabia, the National Centre for E-learning and Distance Learning (NCEL) designed its own LMS in collaboration with Meteor Group of Companies in Malaysia called Jusur LMS (Al-Khalifa, 2009)

The vision of the NCEL (n.d.) is 'to establish an integrated educational system which depends on an extensive infrastructure in the form of a national centre providing excellent learning environments which combine synchronous face to face learning and asynchronous learning within the framework of blended learning, in order to achieve large-scale dissemination of this type of education'. The NCEL is one of the many projects of the Ministry of Higher Education, and its primary objective is the development of the university education system in the Kingdom. It is an important addition to the many recent projects launched by the ministry.

Due to the needs stemming from the massive population explosion, the scarcity of faculty members in terms of both quantity and quality and the need to maximise the efficiency of financial resources, the centre will play a crucial role in the future coordination of approved programmes, training methods and the production of educational material (Ministry of Higher Education n.d.).

The NCEL aims to achieve a number of major objectives (Office of the Deputy Minister for Educational Affairs 2009), which can be summarised as follows:

- To disseminate the applications of e-learning and distance education in HEIs in line with standards of quality;

- To contribute to the expansion of the absorptive capacity of university education institutions through the applications of e-learning and distance education;
- To disseminate technical awareness and the culture of e-learning and distance education to contribute to building the information society;
- To contribute to the evaluation of e-learning and distance education projects and programmes;
- To support research and studies in the areas of e-learning and distance education;
- To develop quality standards for the design of digital educational materials, along with their production and dissemination;
- To provide advice on relevant points in the areas of e-learning and distance education;
- To build and disseminate educational software to serve the educational needs of the public and private sectors;
- To promote excellence in the areas of e-learning and distance education in HEIs;
- To organise meetings, conferences and workshops which contribute to the development of e-learning and distance education; and
- To cooperate with international organisations and world bodies on the relevant areas of e-learning and distance education.

However, Jusur has some disadvantages such as poor user experience due to technical failures as well as poor accessibility. Salum (2009) stated that Jusur LMS features only English and Arabic language content, the instructor cannot add or remove students from the system independently from the support centre, the forum does not include a list of the users who are online at the time, there exist only two options to browse the topics in the forum (e.g. next, and last), extensive files cannot be uploaded in the form of compressed folders, and Jusur LMS has not been integrated with other systems used in the same university such as faculty members academic portal or registration portal.



Without a doubt, the use of e-learning in Saudi Arabia is essential for effective education in terms of human capacity. This is a significant issue in the adoption and success of e-learning and distance learning, especially for females, as they represent half of the population; more resources could be specifically targeted to this area (AlMegren & Yassin 2013). There are thousands of female students in gender-segregated institutions, which are facing over-enrolment and a noticeable lack of female lecturers (Demiray 2010, p.762); for this reason, the necessity for e-learning and distance learning becomes more apparent.

A previous study by Aljahni, Obayya and Skinner (2010) titled 'Encouraging Effective Blended Learning in Higher Education in the Kingdom of Saudi Arabia' found that one of the key challenges to creating effective BL communities is not just the relationship between technological and non-technological factors, as much of the literature on BL focuses on its adoption in the Western world, but also that we know very little about the importance of various cultural contexts, particularly relating to the Arab world. In addition, in her study titled 'E-learning in Saudi Arabia', Hend Al-Khalifa (2010) found that there is still a lack of trust of the efficiency of e-learning, a low level of computer literacy with weaknesses in understanding e-learning requirements by teachers and students, weakness in the training in e-learning environments management and pedagogy, a lack of incentives for using e-learning and lack of ICT infrastructure.

Alyawar (2007) looked at the obstacles facing open universities from the viewpoint of students at the Arab Open University in Saudi Arabia-Jeddah Branch; after analysing and discussing the study questions, the following three obstacles were identified: (1) administrative obstacles, (2) academic obstacles and (3) technical obstacles such as poor equipment, a low number of computer labs and the continuous dropping of the Internet connection. Therefore, more insights the factors and approaches that can improve the information technology infrastructure in further education and HE are urgently needed in Saudi Arabia.

Several studies have investigated e-learning in HE in Saudi Arabia, and extremely important findings and recommendations have been reported. In 2006, Yamani

published a study with a sample of 152 faculty members from UQU and King Khalid University (KKU); the research goal was to assess e-learning's ability to integrate Saudi HE into the technological revolution. This study provided a number of valuable recommendations, the most prominent being the necessity and inevitability of using e-learning in HE to meet contemporary challenges, as well as encouraging the utilisation of the Internet to allow experiences to be exchanged between lecturers and students inside and outside the university and to provide assessments and feedback to students. The author concluded that one of the main obstacles to successfully implementing e-learning applications is the lack of rules and regulations for setting up e-learning degrees and the current weaknesses when it comes to preparing and developing staff to use technology in e-learning (Yamani 2006).

In 2009, a set of recommendations and a national strategic plan to localise and implement e-learning in Saudi universities was issued at the First International Conference for E-Learning and Distance Learning, held in Riyadh. As a result, the deanship of skills development at KSU was established, and some universities have already started to undertake web-based instruction in their teaching and learning programmes. These include KKU at Abha, KSU in Riyadh and King Abdulaziz University in Jeddah. The E-learning Deanship (ELD) at KKU was established in 2006 as part of constant efforts to improve the educational process. E-learning has been adopted at three levels in KKU – supportive e-learning, blended learning and full e-learning (ELD n.d.). These can be defined as follows:

- Supportive e-learning: This involves no change in classroom attendance but the courses are facilitated through the LMS, providing students with materials, assignments and collaboration tools such as discussion boards.
- Blended learning: Students attend classes and work online according to the percentage specified by the college and the course instructor. This is coordinated with courses offered through the LMS to provide students with materials, assignments and collaboration tools like discussion boards.

- Full e-learning: All activities occur online except for examinations and orientation lectures. Courses are offered through the LMS to provide students with materials, assignments and collaboration tools covering all course materials and aspects. In 2010, the ELD at KKU established the first unit of the distance learning system in the Kingdom in the College of Engineering, opened in collaboration with an Australian university to teach part of the electrical engineering course as a primary step to evaluating the success of the experiment. This represents a precedent for universities in the Kingdom.

In 2009, KSU was ahead of all Saudi, Gulf and Arab universities in three major academic rankings: It ranked 199<sup>th</sup> in the Webometrics Ranking (Webometrics 2010), 94<sup>th</sup> in the QS World University Rankings for Life Sciences and Biomedicine (Top Universities 2009) and 402<sup>nd</sup> according to the Centre for World-Class Universities and the Institute of Higher Education of Shanghai Jiao Tong University (Academic Ranking of World Universities [ARWU], 2009). According to the Times Higher Education (THE) Asia University Rankings, at present, King Abdulaziz University is the best in Saudi Arabia and amongst all Arab universities, and this institution ranked 49<sup>th</sup> in the field of HE in Asian universities. Meanwhile, King Fahd University of Petroleum and Minerals was awarded second place among Arab countries' universities and 62<sup>nd</sup> among Asian universities. Finally, KSU was awarded 3<sup>rd</sup> place amongst Arab universities and 77<sup>th</sup> amongst Asian universities (THE 2013).

KSU considers e-learning to be a highly effective vehicle when it comes to achieving learning objectives successfully. Therefore, it established the deanship of e-learning and distance education in 2008 to support effective teaching by ensuring that technology has been incorporated into most aspects of teaching for virtually all faculty members at the university (Al-Othman 2009). At KSU, courses have been provided to train faculty members on how to use blackboard and SMART board technology. JUSUR, an Arabic-based LMS, provides software capable of managing an integrated e-learning process involving e-registration, e-scheduling, e-connectivity, e-tracking, e-contacting and e-testing. By 2009, about

784 smart classrooms had been installed, each equipped with a projector, an Internet-connected computer and a document reader for the efficient and effective facilitation of instructional material. Presentation rooms with a projector and computer are also used for instructional purposes (KSU 2009).

The e-learning and distance education deanship at KSU continues to implement smart and presentation classrooms. In their plan for 2011, all classrooms would include the technology needed to present educational materials in the most efficient and effective manner possible. KSU provides students with about 3,911 workstations equipped with the newest technology, and multiple software packages for students and faculty academic use. Software in the labs varies from specialised engineering and art software to more general and popular software. In addition, extensive multimedia centres and technology-based classrooms have been constructed to support teaching. All this is coordinated by the e-transactions and communications deanship to support educational needs by providing a variety of computing, networking and telecommunication services. The deanship manages the campus network and telephone system, and offers a number of services, including Internet access, public computer labs, electronic mail, computer consulting, technology support and repair (KSU 2009).

In the 2007–2008 academic year, King Abdulaziz University was the first Saudi university to employ a virtual learning environment by offering bachelor degrees through online learning; in 2010–2011, the first batch of students graduated with these degrees. Moreover, in August 2007, the Imam Mohamed Bin Saud University began offering a distance learning programme for some courses that delivered instruction entirely through the Internet (Alebaikan & Troudi 2010, p.5). September 2009 marked the opening of the King Abdullah University of Science and Technology (KAUST), which is considered the largest university in both Saudi Arabia and the Middle East. The university's main campus is located on an area of more than 36 million kilometres along the Red Sea coast. KAUST is governed by an independent, self-perpetuating board of trustees and is supported by a multi-billion-dollar endowment. Accepting men and women from around the world, it is an international, graduate-level research university

dedicated to inspiring a new age of scientific achievement in the Kingdom that will also benefit the region and the world (KAUST n.d.).

Similar work done by Albeikan (2009) on blended learning within Saudi Arabia has been an interesting starting point to this study. Although Albeikan addresses one of the research questions of the current study i.e., perceptions of blended learning by the students and staff within the HE sector of KSA, the focus there is primarily to understand how Saudi female lecturers and undergraduate students experience and perceive blended learning and its future in Saudi Arabia. The primary source of data for the research was also limited to female campuses.

However, the current study aims to understand the overall perception of blended learning in HE within KSA region and its effectiveness in achieving learning objectives and the primary source of data for research is spread across various universities within the region of KSA. Cultural, social and religious aspects of KSA are considered as part of the data analysis, but the primary goal of the research is to understand the overall perception of blended learning by all the players involved (staff, students, policy makers, educationists etc.). Given that Albeikan conducted the study three years prior to this one and there has been rapid technological advancement and change in the attitude of KSA got towards blended learning, a fresh investigation is warranted.

Albeikan and Troudi (2010) is a related work, which primarily addresses the obstacles facing the implementation of blended learning within universities in KSA. Their work focuses on the technological obstacles as well as hindrances from traditional approach to education. Our current study takes into account the findings of the above study in designing the BLEI instrument particularly in assessing the 'infrastructure' aspect of the BLEI instrument and how it impacts the deployment of blended learning.

## 2.9. SUMMARY

IT has become critical in the provision of postsecondary education. It is important for efficient and cost-effective management, and necessary to fulfil the requirements of students and staff in a nonstop (24x7x365) learning and research environment that increasingly relies on networks. On the other hand, educational institutions increasingly face a vital need for highly qualified resources for the attraction and retention of the best staff, students and investments (IBM n.d.). Notably, the Kingdom of Saudi Arabia is aware that society is based on educated and skilled people; therefore, education is at the forefront of the Saudi government's priorities. The vision for the future comprises an open e-infrastructure enabling flexible cooperation and optimal use of all electronically available resources to enhance all education levels.

In 2007, the head of ICT at the Saudi General Authority for Investment, Dr Ahmed Yamani, stated that the Kingdom had allocated \$1,507 billion to spend on energy projects, communications and economic cities over the next 10 years, including \$64 billion directed to building information technology and the establishment of the necessary technical infrastructure (Telecom and Digital World Magazine 2007, Para. 6). Although the telecommunications infrastructure is improving in Saudi Arabia and Internet services are extending to the more rural areas, unreliable technology and infrastructure, as well as inadequate maintenance and technical support, could still negatively affect the accessibility to and availability of online learning (Demiray 2010, p.767).

This chapter considered effective information technology infrastructure for e-learning and distance learning in HE by reflecting on a variety of cultural contexts from countries in the same region as Saudi Arabia which could have similar ICT infrastructure, such as Egypt, the UAE and the Kingdom of Jordan. It also shed light on implementation and usage of ICT in education in the most advanced countries by providing a summary and highlighting relevant work and plans in such countries as Sweden, the UK and the US (see Tables 2.1 and 2.2).

<b>ICT infrastructure</b>	<b>Hardware</b>	<b>Software</b>	<b>Connectivity</b>	<b>Human resources</b>
<b>Egypt</b>	---	Most course formats are not prepared for e-learning	---	There is a need for: -Skilled and trained instructional technologists -E-learning training courses
<b>United Arab Emirates</b>	---	---	---	---
<b>Kingdom of Jordan</b>	Lack of classrooms prepared for e-learning and computer laboratories	Lack of educational software	---	Lack of technicians
<b>Kingdom of Saudi Arabia</b>	-Poor equipment -Few computer labs	---	-Frequent interruptions to Internet connection - Administrative difficulties	There is a need for: -Skilled, trained instructional technologists -E-learning training courses for student and lecturers in the training in e-learning environment management and pedagogy -More incentives to use e-learning -High capacity to accept students -More female lecturers

**Table 2.1. ICT Challenges and Obstacles in Arab Nations.  
(Aljahni, Al-Begain & Skinner 2011)**

Country	ICT infrastructure
<b>Egypt</b>	<p>Traditional classroom training is more effective and desirable than e-learning.</p> <p>For the current content, the programmers at Ministry of Education centres are not focusing on transforming courses to e-learning formats, but rather on repurposing existing content (from paper-based to web-based material).</p> <p>There is a need for skilled instructional technologists trained and developed by human resources.</p> <p>There is no native source for e-learning training course developers. A number of the existing materials in Arabic do not follow the web-based training standards (SCORM/AICC).</p> <p>There is no large-scale Arabic production of courseware for university/vocational areas.</p>
<b>United Arab Emirates</b>	<p>The telecommunications sector is the most highly developed in the Arabian Gulf region.</p> <p>Most educational institutions are far from fully adopting e-learning due to the IT infrastructure.</p> <p>A set of strategies has been laid out by the federal government due to the urgent requirement to implement the most current educational technologies to improve learning and teaching methodologies at all stages, from primary education to HE.</p>
<b>Kingdom of Jordan</b>	<p>E-learning infrastructure still represents the lowest average.</p> <p>There is a weakness in terms of financial resources.</p> <p>Classrooms prepared for e-learning uses are lacking.</p> <p>There is a lack of educational software designed in an integrated manner.</p> <p>Insufficient numbers of computer laboratories and technicians are available.</p>
<b>Kingdom of Saudi Arabia</b>	<p>Saudi Arabia is the largest ICT market in the Middle East.</p> <p>In 1996, the Ministry of Education established the CIC to provide schools and educational institutions with a wide range of ICT services.</p> <p>The National Centre supports the e-learning and distance learning programmes in Saudi HE for E-learning and Distance Learning and the universities themselves.</p> <p>Distance education is often dependent on faculty members who are less aware of this type of education and do not receive any career or financial benefits.</p> <p>HE in Saudi Arabia still needs to adopt e-learning and distance education as an instructional strategy due to capacity issues.</p> <p>Human capacity is a significant issue in the adoption and success of</p>



---

e-learning and distance learning in Saudi Arabia.

There are thousands of female students in gender-segregated institutions, which are overpopulated in the face of a noticeable lack of female lecturers; this puts into focus the demands for e-learning and distance learning.

There is still a lack of trust as to the efficiency of e-learning.

A low level of computer literacy has been evidenced, with weaknesses in understanding e-learning requirements amongst teachers and students.

There is weakness in the training related to e-learning environment management and pedagogy.

Incentives for using e-learning are lacking.

There is insufficient literature on BL, and the studies that have been conducted take as their focus its adoption in the Western world.

Issues have been found regarding administrative obstacles, academic obstacles and technical obstacles such as poor equipment, a low number of computer labs and the continuous dropping of the Internet connection.

Sweden is the highest-ranking country for ICT.

It was given the top rank in the latest edition of measuring the information society.

The World Economic Forum (2010) identified Sweden as the second-highest-ranked country in terms of overall global competitiveness in its most recent report.

Sweden has been considered a world leader in ICT in education for a long time.

All schools in Sweden have had computers and Internet for many years.

**Sweden** About 70% of Swedes use the Internet daily and 50% of all 5 years olds have used the Internet.

There are three ICT objectives in Sweden, as follows: (1) ICT should be easy to use to improve people's and companies' everyday life and life quality; (2) ICT should enhance sustainable development; and (3) ICT should be a safe and effective way for everyone in all parts of the country to access interactive public e-services.

ENIS has selected front-running schools to set an example by exchanging solutions, experiences and problems, engaging in collaborative projects with European schools, offering study visits and supporting other schools, setting up new ICT, validating and testing new educational materials and cooperating with other schools in workshops seminars, exhibitions and conferences.

In 2003, all universities in this country had access to computers, as well as the Internet.

Swedish universities have been offering courses in e-learning layout for many years through two models of e-learning, specifically Internet-based study and decentralised study.

In Internet-based study, courses are offered through the Internet with little or no face-to-face interaction.

Sweden is a country where most people exhibit digital efficiency. Students frequently have more ICT knowledge than their teachers do.

The current issue in Sweden is the teachers' level of skills and knowledge relating to ICT. In Sweden, a key challenge has been concern regarding the lack of ICT knowledge amongst most academic staff.

One of Sweden's challenges in e-learning is a transformation from individual initiatives to a university culture. This is hampered by some resistance to change in this culture.

ICT plays an active role in UK HE.

The UK is often a world leader in networking, content and digital libraries and access management.

The UK e-infrastructure should provide the researcher with access to the systems, services, networks and resources needed at the time they are needed; facilities to find resources easily and use them appropriately; confidence in the integrity, authenticity and quality of the services and resources used; assurance that outputs will be accessible now and in the future; a location-independent physical infrastructure to combine computation and information from multiple data sources; advanced technologies to support collaborative research; and the training and skills needed to exploit the available services and resources.

**United  
Kingdom**

The UK e-infrastructure should allow researchers to exploit the power of advanced information technologies and applications to continuously improve the process of research; collaborate and communicate securely with others across disciplines, institutions and sectors; maximise the potential of advanced technologies to support innovation and experimentation; share research outputs with others and reuse them in the future; and engage with industry in support of wider economic goals.

The UK e-infrastructure must enable the growth of knowledge transfer and the development of the commercial applications of research outputs; allow research funders to track the outputs from the research they finance; protect individuals' privacy and work within regulatory, legal and ethical constraints; protect intellectual property and engage in rights management; and preserve digital information output as a vital part of the nation's cultural and

---

intellectual heritage.

Colleges and universities in the UK are inspired by the innovative use of digital technologies.

The following examples of the current UK e-Infrastructure funded by JISC, the UK e-Science programme and joint initiatives involving JISC and RCUK: Super JANET 5, Access Grid Support, the OMII, the DCC, the NGS and NaCTeM.

There was an average increase of approximately 12–14% per year in enrolments in e-learning in postsecondary institutions in the US between 2004 and 2009, in comparison with an average increase of around 2% per year in enrolments overall.

About 25% of all students in HE had taken fully online courses in 2008.

E-learning is increasingly becoming a predominant form of tertiary education.

The US NETP provides a model of 21<sup>st</sup>-century technology-based education.

**United States**

The leveraging of ICT would allow learning to be transformed throughout the US.

NETP objectives are collaborative teaching strategies as compared with traditional instructor-led classrooms; professional e-learning; interactivity, suitability and continuity; and the opportunities for cooperation provided by online environments.

The NETP includes objectives and recommendations in relation to five important subjects: learning, assessment, teaching, infrastructure and productivity.

Among the necessary elements of the 21<sup>st</sup>-century education model is a thorough and complete infrastructure to provide each student, instructor and level of the learning system with the resources needed whenever and wherever they are needed.

The most important issue is that people, processes, education resources, strategies and sustainable models for continuous improvement must be included in the infrastructure, as well as broadband connectivity, servers, software, management systems and administrative tools.

Technology has been adopted in several parts of learning; therefore, it is vital to have a comprehensive infrastructure to be able to move beyond the traditional model of classrooms with instructors and students to a teaching model that gathers teachers and students in classrooms, labs, libraries, museums, workplaces and homes – from any computer and at any place in the world where the user has access to the Internet.

The rapid advances in computers and communications over the last

---

four decades has provided strong technical capabilities for education. Nowadays, Internet access is cheap, tools are user friendly and websites provide informative data and course contents. All have the capability to bring together online education activities beyond policies, limits and traditions.

The public learning system has already utilised many of the abovementioned resources. Nevertheless, there is an urgent need to transform technology-based learning. The evolving technology is creating a push, while a pull is coming from the nation's need to enhance the learning system.

**Table 2.2. The Current ICT Infrastructure – A Comparison Between Arab and Western Nations. (Aljahni, Al-Begain & Skinner 2011)**

## 2.10. CONCLUSION

This literature review provided the background on which the remainder of this research on improving BL environments will build upon. This chapter on BL environments for HEIs has outlined some of the foundations of this learning environment.

This review underlined the importance of integrating the physical world with the digital domain in HEI learning environments, given the significance of BL emerging as one of the top trends in the knowledge delivery industry. The impact of the modern learning environments was discussed and the changes in students' expectations of HEIs were described. Furthermore, several definitions of BL environments were outlined, along with similarities to other expressions related to BL, which have often been used interchangeably in recent literature.

A number of noteworthy studies have specifically treated the online element. One argument– which the present author supports – is that they might contextualise the individual items for the online and blended environments without using their face-to-face experiences as a standard for comparison. Therefore, a review was conducted of some advantages and disadvantages of pure online and blended learning.

Issues related to the ICT infrastructure of blended learning in HE and e-infrastructure in HEI environments were discussed. This review is unique in the particular combination of an overview of the world's leading regions and the Arab context in terms of the ICT infrastructure and e-infrastructure of BL in HEIs.

This literature reviewed focused on the development of e-learning and distance education in the KSA. Additionally, the influence of changing pedagogical practice on the newly emerging technology and its application in education on Saudi Arabia was discussed. The role and presence of the education technology within the context of the traditional learning environment at some universities was discussed, along with the government's positions.

The literature review considered some studies' similarities in the related field of BL and drew attention to some knowledge on this topic. As e-learning becomes more prevalent in Saudi Arabia, more insights into factors and approaches which can improve connections between the virtual and physical elements of blended courses within universities are urgently needed so that blended learning will become more effective across KSA (Badawi 2009). However, it is also evident from the literature that we do not fully understand all of the complex issues that affect the student learning experience in a blended environment, nor do we fully comprehend the relationship between all of the technological and non-technological factors. As more countries adopt e-learning, encouraging the effective use of BL and creating communities of blended learners within different cultural contexts, BL is becoming even more important, representing a vital area for more in-depth investigation.

Finally literature review has highlighted the need for:

1. More insights into the factors and approaches which can improve connections between the virtual and physical elements of blended courses within universities,

2. Comparative research into the strengths and weakness the new technologies integrated with face-to-face environments, to investigate the characteristics of optimal blends for learning.
3. Pedagogical frameworks to support blended learning for teachers and students and
4. The need to study the factors that impact blended learning within the higher education environment in Arab region at large and Saudi Arabia in particular. This is expected to fill the existing gap of not having significant literature on blended learning within the Arab context.

## **CHAPTER 3: METHODOLOGY**

### **3.1. AIMS AND OBJECTIVES**

The general aim of this study was to identify and assess the current status of blended learning in Middle Eastern universities, and to identify the obstacles and challenges encountered at those universities when implementing BL with more concentration on the BL infrastructure. This was achieved by investigating through quantitative and qualitative methods, the extent of satisfaction experienced by HE students, staff and experts with BL environment at Saudi universities. As mentioned in Chapter 1 and 2, BL environment in the context of this thesis is the means and mechanisms used to merge the physical and digital worlds for learning.

The objectives of the study are as follows:

- To research the literature concerning the impact of the cultural, ethnic and religious context on BL and determine how this is applicable to all countries/contexts with a similar ethos. Specific focus will then be applied to the influencing factors within the Middle East and specifically KSA as the subject of the case study;
- To assess HE students', staff's and experts' perceptions of BL environments within HE;
- To determine the effectiveness of BL techniques in Saudi universities, taking into account the cultural, social and economic context;
- To design, verify and validate a tool for evaluating the construct of BL, as well as its deployment and impact, and make the tool extensible for use as a generic evaluation tool for BL environments;
- To determine the reliability of the tool and its appropriateness within the HE environment, taking into account the new aspect of 'infrastructure' that is introduced in it;

- To investigate the impact of gender, level of study, subject area and culture on the BL environment;
- To provide valuable recommendations for the implementation of BL based on the analysis of the two surveys specifically designed to gauge students, staff's and experts' perceptions of BL.

### 3.2. RESEARCH QUESTIONS

This section introduces the vital research questions for this study.

**Research Question 1:** From the perspectives of HE students, staff and experts, have LMSs such as Moodle, Tadarus, Blackboard, ATutor, JUSUR and WebCT used in university programmes and courses really improved the learning environments?

**Research Question 2:** Does the BL environment currently provided in HEIs facilitate collaborative learning?

**Research Question 3:** Do HEI students; staff and experts have a positive feeling and sense of achievement and satisfaction concerning their BL environment?

**Research Question 4:** Does the technology in some forms of implementation harm the learning environment's goals and objectives?

**Research Question 5:** Do students, staff and experts believe that the infrastructure in their environment facilitates achievement of the learning objectives of their courses?

**Research Question 6:** What is the extent of support for BL in KSA?



### 3.3 RESEARCH METHODOLOGY

Thomas Kuhn (1922-96) emphasizes that researchers have to do their work based on a set of beliefs about knowledge (theory), which is called a paradigm. The parameters and the boundaries for scientific research are established by the paradigm, and "scientific inquiry is carried out strictly in line with it" (Crotty, 2005, p. 35). Research as defined by Ernest (1994) is a systematic and critical enquiry with the goal of generating knowledge while also significantly adding to this knowledge guided by theoretical perspectives.

For more than a century, there has been disagreement among the advocates of quantitative and qualitative research paradigms. From these debates, purists have emerged on both sides (cf. Campbell & Stanley, 1963; Lincoln & Guba, 1985). While the quantitative purists maintain that social science inquiry should be objective and context-free generalizations (Nagel, 1986) are desirable and possible and the real causes of social scientific outcomes can be determined reliably and validly, the qualitative purists also called constructivist and interpretivists argue that time- and context-free generalizations are neither desirable nor possible in a research.

While one advocates that educational researchers should eliminate their biases, remain emotionally detached and uninvolved with the objects of study and only empirically justify their stated hypotheses, the qualitative purists profess the contrary. The two dominant research paradigms have resulted in two research cultures, "one professing the superiority of 'deep, rich observational data' and the other the virtues of 'hard, generalizable' . . . data" (Sieber, 1973, p. 1335).`

Mixed methods research is formally defined here as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts into a single study. Philosophically, the mixed research makes use of the pragmatic method and system of philosophy. Its logic of inquiry includes the use of induction, deduction and abduction.

Mixed methods research also is an attempt to legitimate the use of multiple approaches in answering research questions, rather than restricting or constraining researchers' choices. It is an expensive and creative form of research, not a limiting form of research. It is inclusive, pluralistic and complementary. It suggests that researchers take an eclectic approach to method selection and the thinking about and conduct of research. What is most fundamental is the research question (Johnson & Onwuegbuzie, 2004). Therefore based on the research questions defined in section 3.2, mixed research methodology was chosen to be most appropriate to be inclusive and complementary.

In order to adopt the mix research methodology effectively, the study considered all the relevant characteristics of both the qualitative and quantitative research methods. For instance, the research focused on deduction, standardised data collection and statistical analysis adhering to the traditional quantitative research. Further the study was based on discovery, exploration with the researcher as the primary instrument of data collection. Gaining an understanding of strengths and weaknesses of quantitative and qualitative research puts the researcher in a position to combine strategies based on what Johnson and Turner (2003) called the 'the fundamental principle of mixed research'.

Based on this principle, the current study, although the source of data collection remained the same, the data was analysed using various methods and strategies based on qualitative and quantitative analysis such that the result was a complementary and non-overlapping. The study aimed to implement this principle effectively such that the results were superior to the mono method studies.

The aim was to achieve a greater confidence in the conclusion arrived by corroborating the findings across different approaches. If the findings were conflicting, then the research offered a greater knowledge to modify the interpretations and conclusions accordingly.

This research is primarily concerned with the understanding of participants rather than testing or verifying general law. From this philosophical point of view, the role of the researcher is "to understand the multiple social constructions of meaning" (Robson; 2002, p. 27) of people and how together the subjects of study and the researcher--construct "the reality." Lincoln and Guba (1985) find interpretive inquiries to be better served by qualitative research because of their sensitivity, flexibility and adaptability. Therefore, the study included qualitative open-ended questions as part of the study, which is otherwise predominantly quantitative to assess the effectiveness of BL in HE within KSA.

### 3.3.1 METHODS OF DATA COLLECTION

This research was generally based on a mix of qualitative and quantitative data collection and analysis. The focus of the study is HE within KSA and hence the data source and sampling too from the HE within KSA. The approach adopted was aimed at obtaining an in-depth understanding of the situation regarding BL in Saudi Arabia. It is expected that this will also help to explain and interpret the evolution of BL in the Kingdom. Mixed methods are used in order to gather data about practitioners' rich experiences (Gilmore & Carson 1996). As Yin (1994), the methodology adopted was required to be appropriate where the researcher had little control over events, and when the focus is on a contemporary phenomenon within some real-life context, as in this case.

This thesis investigates the learning environment of HE students undertaking their studies through BL environments. Such environments involve integration of the physical world with the digital domain through combination of different types of resources and activities with a range of learning technologies in and out of the traditional classroom. In such environments, learners can interact and build ideas by mixing synchronous and asynchronous instruction based on the Internet and computer technology. A review of the literature examined

traditional learning environments, pure online virtual environments and more recent literature pertaining to a blended environment is presented in Chapter 2.

The research adopted the qualitative and quantitative data analysis through triangulated data, which is an accepted means of reducing bias and decreasing reliance on interpretation of a single data source. Such a method increases the validity and credibility of the results (Skelton 2008); it also gives a more detailed and balanced picture of the condition of the BL environment in HE in Saudi Arabia. From the work of Campbell and Fiske (1959) concerning validating research results, the use of triangulation in social sciences has emerged based on their idea of 'multiple operations' (see Hussein 2009).

Triangulation is defined as a process of using multiple methods (mainly qualitative and quantitative) to study the same phenomenon for the purpose of increasing the study's credibility by combining the methods used (Hussein 2009; Yeasmin 2012).

### **Why Were Triangulation Methods Used in This Study?**

Triangulation methods were used to increase credibility of the knowledge obtained through scientific means by improving both internal consistency and generalisability. Indeed, two methodological approaches were combined in this research – qualitative and quantitative – to study the phenomenon of BL in HE in Saudi Arabian universities. This was done with the purposes of enabling a wider and deeper understanding of the subject being studied; increasing the study's accuracy; ensuring confirmatory results and completeness; and validate the quantitative data collection instrument, called the blended learning environment instrument (BLEI). The method was also selected to give a more detailed and balanced picture of the condition of the BL environment in HE in Saudi Arabia.

The perceptions and experiences of HE students, staff and experts concerning their learning environment were discovered through quantitative and qualitative

methods. Quantitative data on students' experiences were gathered by a newly adapted instrument, BLEI, for HE students from all the regions of the Saudi universities, and the qualitative data from these same students were collected through open-ended question added to the BLEI survey. In addition, quantitative and qualitative data about the perceptions and experiences of staff and experts were gathered by developing a separate survey on the use of BL environments.

### 3.4. SAMPLING APPROACH

#### 3.4.1. Sampling Techniques

Data was collected from students both from under-graduation and post-graduation across 35 universities within Saudi Arabia where BL was adopted. Other participants of the survey were the staff, lecturers and the experts in the field. It was believed that each type of stakeholder would contribute to this study through his or her own perspectives about BL within KSA. Their views and experiences could help to construct a better view of how BL is perceived and is evolving within KSA. Further the data sources included both male and female participants as gender segregation, which is part of Saudi culture is believed to impact the way BL is perceived and developed.

#### **Pilot Study**

It is an established practice for education researchers to conduct a pilot study and the main study. They both contribute to the findings of the research. The value of conducting a pilot study before the main study is examined in various literature. Baker (1994). Pilot study in this study was particularly used for examining the appropriateness of the proposed BLEI instrument of investigation. Secondary reasons for conducting a pilot study it gives the researcher an early warning about possible areas in which the research could fail, or whether suggested research methods are unsuitable and it enables the researcher to

deduce whether there are any politics that might influence the continuity of the research.

The scarcity of studies available on evaluating the perceptions of blended learning within HE in KSA required me to do a pilot study for my research to explore the field and to develop a better focus. The pilot study did have an influence on the kind of participants involved in the main study. For the pilot, my sample covered only one type of public higher education stakeholder: faculty and staff. However, I thought, as this study is an exploratory one, I would benefit from a wider perspective of private higher education and to include other stakeholders in my study (policymakers, students, employers). This change required adding questions that address the relation between the labour market and private higher education.

### 3.5. DEVELOPMENT AND VALIDATION OF THE BLENDED LEARNING ENVIRONMENT INSTRUMENT IN HIGHER EDUCATION

#### 3.5.1 Why a New Instrument?

Evaluating the learning environment is not new and the first school environment instruments were developed as early as 1958, however, these early environmental instruments were somewhat limited as they were awkward to use and they were not based on a clear, coherent theory (Fisher & Fraser, 1990). Over thirty years ago two researchers, Herbert Walberg and Rudolf Moos, began independent studies on educational environments. Walberg developed the *Learning Environment Inventory* (LEI) while Moos developed social climate scales, one of which was the *Classroom Environment Scale* (CES) (Fraser & Wubbels, 1995). In essence, these instruments investigated three dimensions. Firstly, the relationships created and applied within the environment, secondly, the personal development and growth the environment either encouraged or discouraged and finally, the systems used to monitor or control the environment

(Moos, 1979). Subsequent research of educational environments can be seen to have been built upon ideas first developed by Kurt Lewin and Henry Murray and their followers C. Robert Pace and George Stern (Fraser, 1998b). The association between the learning environment variables and student outcomes has provided a rationale and focus for the application and development of learning environment instruments (Dorman, Fraser, & McRobbie, 1994; Newby & Fisher, 1997). The two instruments first developed by Walberg and Moos have spawned many new lines of research and the creation and application of many new learning environment instruments spanning many countries (Fraser, 1998a; Koul & Fisher, 2005). The field of learning environment research and the development and application of economical perceptual measures is one of robustness and growth (Fisher & Fraser, 1990; Fraser, 2001; Goh & Khine, 2002; Tobin & Fraser, 1998).

A variety of instruments have been developed to gather quantitative data on learning environments (Chandra & Fisher 2006; Moroney, Leong & Boorer n.d.), but only a small number have focused on hybrid or blended learning in HE. A sample of the latter is presented in the following:

- The CUCEI, which assesses perceptions of the classroom environment in universities and college classrooms from a psychosocial perspective (Fraser & Treagust 1986);
- The Constructivist On-Line Learning Environment Survey, which was designed by Taylor and Maor (2000) to monitor the quality of online teaching and learning;
- The Web-based Learning Environment Instrument (WebLEI), which was developed to assess students' perceptions of online learning by Chang and Fisher in 2001, and has been used to evaluate environments in which learning takes place online (Moroney, Leong & Boorer n.d.); and
- The Distance Education Learning Environments Survey, which was developed to assess and explore the psychosocial learning environment in postsecondary distance education (Walker & Fraser 2005).

To effectively gauge perceptions about BL environments in HE, the BLEI was developed. This tool was designed to support on-going research and for general use. The BLEI builds on the work of Chang and Fisher, in which they described a framework for evaluating and assessing students' perceptions of online learning in HE; this is referred to as WebLEI (Chang & Fisher 2001).

WebLEI is based on Tobin's (1998) Connecting Communities of Learning (as cited in Chandra and Fisher 2006), which describes a framework for evaluating interactive learning environments (Moroney, Leong & Boorer n.d.). It considers four aspects of the learning environment; three are from the Tobin instrument (Access, Interaction and Response) and a fourth (Result) was added by Chang and Fisher. Their 'Result' element focuses on information structure and the design of online material (Chang & Fisher 2001).

WebLEI has been validated on multiple occasions, including the works of Chandra and Fisher (2006), Wong *et al.* (2006), Moroney, Leong and Boorer (n.d.), Moroney (2009), Levitan (2010) and Wallen *et al.* (2011). Additionally, it has been adapted for use in New Zealand, as part of an investigation into BL in HE (Moroney, Leong & Boorer n.d.).

There was need for a new instrument as this study was unique in its context. The study was particularly focussed on HE within KSA region. The factors that influence this sample population are unique and have not been studied previously. These factors are socio-economic, cultural and ethical factors that are unique to Arab world and in particular to KSA. Previously designed instruments have been designed, developed and validated on mostly western context which differing impact factors.

Further, as part of this study, infrastructure as a contributing factor towards the perception of BL in HE within KSA is being considered. Not many previously designed instruments have evaluated 'infrastructure' as an impact factor for BL. Therefore an new instrument was developed by modifying the existing, highly validated WebLEI was designed.



The BLEI uses the four aspects identified in WebLEI and adds a fifth: Infrastructure. Items within the retained components have been adjusted to facilitate analysis of BL in HE within KSA. Further amendments should be considered when using the instrument with a different focus or in other locations.

Chang and Fisher (2001) asserted that the four aspects considered by WebLEI are arranged in a linear hierarchy: Good Access facilitates Interaction, which is likely to improve Response, and ultimately, Results. It is proposed that the fifth aspect of the BLEI should fall below the other four, indicating that appropriate Infrastructure leads to good Access. Furthermore the choice of WenLEI is justified as follows:

*'Until the late 90s, there were no comprehensive instruments had been developed to assess online learning environments for higher education. A new web-based learning environment instrument called the Web-based Learning Environment Instrument (WEBLEI) was the one of the earliest instrument, which was web-based and was designed particularly for HE. It contains four main scales. Three scales (Access, Interaction, and Response) are built upon the work of Tobin (1998). The other scale (Results) focuses on information structure and the design of online material. The rationale behind, and development of, the WEBLEI are described in the paper. Statistical analyses, Cronbach alpha reliability coefficient, factor analysis, and discriminant validity, indicated that the WEBLEI is a reliable and valid instrument.'*

### 3.6. THE INFRASTRUCTURE ASPECT

According to Steffens and Reiss (2010), 'certain infrastructure aspects are important as enablers of blended learning'. In order to be effective, a BL environment requires suitable infrastructure. It is therefore important for HE stakeholders to be aware of how appropriate their ICT infrastructure, or e-infrastructure, is. On a tangible level, 'e-infrastructure' consists of hardware,

software and connectivity. Hardware refers to such devices as servers, desktop and laptop computers, and increasingly prevalent mobile devices. Software includes web browsers, email clients and organisational and productivity tools. Connectivity includes local area networks, wide area networks, the Internet and other enabling technologies.

A study by Steffens and Reiss in 2010 highlighted that infrastructure for BL contains two domains: production and coordination. 'Production infrastructure' includes the manpower for the learning contents production, along with financial resources for the funding of BL. On the other hand, 'coordination infrastructure' helps to align educational activities and achieve the harmonisation of learning activities. This involves both the coordination of relevant actors such as students, lecturers, HEIs and so on, and the coordination of processes such as learning, content production and IT support. This coordination infrastructure is multifaceted and encompasses information, human resources, technocracy, organisation and culture (Steffens & Reiss, 2010).

The infrastructure component Aspect of the BLEI recognises this wider definition. It is designed to measure the extent to which students believe that the infrastructure available to them facilitates the achievement of learning objectives. Considerations include the availability of appropriate technology in lecture theatres, classrooms, libraries and other university buildings, along with the efficiency of technical support services and the possibility of virtual classes when traditional facilities are not available.

### 3.7. THE COMPLETED BLEI

The BLEI consists of 80 items relating to five elements, specifically Infrastructure, Access, Interaction, Response and Results. A five-point response Likert-type scale was used for 54 items, with answers ranging from 'Strongly agree' to 'Strongly disagree' (see Table 3.1).

Likert scale
Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree

**Table 3.1. BLEI Likert Scale Response Options.**

Additionally, respondents had to indicate ‘true’ or ‘false’ for 26 items grouped around common themes.

The four aspects retained from WebLEI are explained below:

- **Access** measures the extent to which participants are able to utilise an LMS at their university and assesses whether BL supports them in meeting their learning goals and exploring their areas of interest.
- **Interaction** considers the use of asynchronous (e.g. forum messages, emails) and synchronous (e.g. live chat, voice over Internet protocol [VoIP]) technology. Items in this group also focus on whether participants find that their environment facilitates collaborative learning.
- **Response** measures the extent to which participants have experienced a sense of achievement and assesses their overall level of satisfaction with their BL environment.
- **Result** considers whether or not participants consider their BL environment, and particularly their LMS, to be structured in a way that helps to achieve learning objectives.
- The new aspect, **Infrastructure**, measures the extent to which students believe the infrastructure in their environment facilitates achievement of the learning objectives in the course.

### 3.8. STUDENT DATA ANALYSIS

Statistical analysis was undertaken for the responses obtained from the 269 student respondents, initially on 83 items across the five aspects. The methods used included Cronbach's alpha as a measure of reliability and exploratory factor analysis to establish discriminant validity and test for statistical significance. Additionally, mean scores and standard deviations were calculated for each factor. It was determined that three items were inappropriate and would adversely affect the reliability and validity of the research as a whole. On reflection, it was determined that the wording of those items was incorrect in that they did not support the same underlying concept. Those data were removed from the sample. Based on analysis using the refined dataset, the BLEI was found to be a valid and reliable instrument.

As a measure of reliability, Cronbach's alpha was calculated for each aspect of the 80-item instrument. This measure of internal consistency was based on the average inter-item correlation. Here, the closer the value is to 1.0, the greater the internal consistency of the items in the scale (Gliem & Gliem 2003; see Table 3.2). Attributing the definitions established by George and Mallery (2003), four aspects exhibited internal consistency of 'acceptable' or better (see Table 3.2). Although the infrastructure aspect is classed as 'questionable', given the overall value of 0.90 and the precedent set by previous research (e.g. Chandra & Fisher 2006), the decision was made to proceed without further modification. For greater reliability in future research, additional tests could be carried out with a larger number of items and refined accordingly.

<b>Aspect</b>	<b>Number of items</b>	<b>Cronbach's alpha</b>	<b>Internal Consistency</b>
<b>Infrastructure</b>	19	0.66	Questionable
<b>Access</b>	26	0.80	Good
<b>Interaction</b>	9	0.84	Good
<b>Response</b>	9	0.70	Acceptable
<b>Result</b>	17	0.90	Excellent
<b>Overall</b>	80	0.90	Excellent

**Table 3.2. Internal Consistency of the BLEI.**

To test for validity, a mean correlation coefficient for each aspect was determined using the mean score for each item and the total scores. The values ranged from 0.57 to 0.83, all statistically 'significant' at the level of less than 1%. Factor analysis confirmed that the five aspects were distinct (see Table 3.3).

	No. Of items	Mean score value	Standard deviation	Mean correlation
<b>Infrastructure</b>	19	3.33	0.64	0.65
<b>Access</b>	26	3.77	0.70	0.66
<b>Interaction</b>	9	3.79	0.66	0.73
<b>Response</b>	9	3.66	0.54	0.57
<b>Result</b>	17	3.64	0.60	0.83

**Table 3.3. Mean Score Values, Standard Deviations and Correlation Coefficients.**

The mean score values of between 3.33 and 3.79 indicate that, in aggregate, for every aspect of the BLEI, the respondents' views ranged between 'Neither agree nor disagree' and 'Agree'. For comparison, it should be noted that Chang and Fisher (2001) reported mean values of 3.38 to 3.90 when validating WebLEI.

Qualitative data from students were gathered from open-ended questions that appeared at the end of the entire survey. These responses were analysed thematically in the same five categories identified above.

### 3.9. ANALYSIS OF DATA FROM STAFF

The staff survey, wherever appropriate, mirrored the questions asked of students in the BLEI. Statistical analysis of the responses obtained from the respondents (91) was initially conducted on 96 items across the four aspects; the 91 respondents represented 43.13% of the total sample. To establish discriminate validity and test for statistical significance methods used included Cronbach's alpha as a measure of reliability and exploratory factor analysis. Additionally, mean scores and the standard deviation were calculated for each element.

It was determined that four items were inappropriate and would adversely affect the reliability and validity of the research as a whole. On reflection, it was concluded that the wording of those items was incorrect in that they did not support the same underlying concept. Those data were removed from the sample. Based on analysis using the refined dataset, the HE staff and expert survey was found to be valid and reliable. Cronbach's alpha was calculated for each aspect of the 96-item survey (see Table 3.4).

<b>Aspect</b>	<b>Number of items</b>	<b>Cronbach's alpha</b>	<b>Internal consistency</b>
<b>Blended learning environment</b>	20	0.79	Acceptable
<b>Impact on participation</b>	46	0.92	Excellent
<b>Infrastructure</b>	25	0.86	Good
<b>Obstacles to adoption</b>	5	0.82	Good
<b>Overall</b>	96	0.88	Excellent

**Table 3.4. Staff Survey – Internal Consistency.**

Qualitative data from staff and experts were gathered from free-response questions that appeared throughout the survey, and from a final free response open-ended question that appeared at the end of the survey. These responses were analysed holistically and the results are presented in the following chapter, after the presentation of the quantitative analysis of staff responses.

### 3.10. CONCLUSION

Whenever the concept of BL is discussed in this research, the following definition is assumed: 'Blended learning is the integration of physical world with the digital domain through a combination of different types of resources and activities with a range of learning technology in and out of the traditional classroom, where learners can interact and build ideas by mixing synchronous and asynchronous instruction based on the Internet and computer technology for full-time students'. *This definition was presented to the respondents at the beginning of the surveys.*

This chapter presents a detailed description of the procedures followed to conduct this study. The theoretical framework and the research methodology follow the objectives and the research questions of the study. Then, a detailed description of the sampling, the data collection methods and the rationale for selection are demonstrated. Justification for the design of new evaluation instrument as well as how and why the participants and survey site were chosen is provided. Data collection methods and data analysis procedures well represented. Research issues such as validity, reliability, and ethical considerations are discussed, again with reference to the literature in the field.

The chapter in particular discussed the development and validation of the BLEI, which assesses student perceptions across five core aspects of blended learning environments: Infrastructure, Access, Interaction, Response and Result. The availability of this 80-item instrument will assist researchers and developers when evaluating blended learning in HE.

In KSA, the results have indicated that the concept of BL was well received. This was verified by statistical analysis using Cronbach's alpha and the mean values of the five elements. As a tool, BLEI exhibited satisfactory and consistent internal reliability and discriminant validity, as did the staff survey. However, universities and the Ministry of Education in KSA would benefit from further research into the issues identified in this analysis, specifically a focus on the aspects of interaction and results for undergraduates and access for postgraduates. The greatest concern is the aspect of Infrastructure, which from both the survey responses and student comments was found to be a significant barrier to providing effective BL in Saudi Arabia.



## **CHAPTER 4: FINDINGS**

### **4.1. INTRODUCTION**

This chapter will present three sets of findings. The first part of this chapter discusses the results of the BLEI questionnaire, which was administered to students of HE in Saudi Arabia. This section will also be supplemented by qualitative data gathered from a 'free response' section of the survey instrument. Following these results, insights will also be offered into quantitative and qualitative data gathered from staff and education experts in HE in Saudi Arabia.

### **4.2. STUDENTS' RESPONSES**

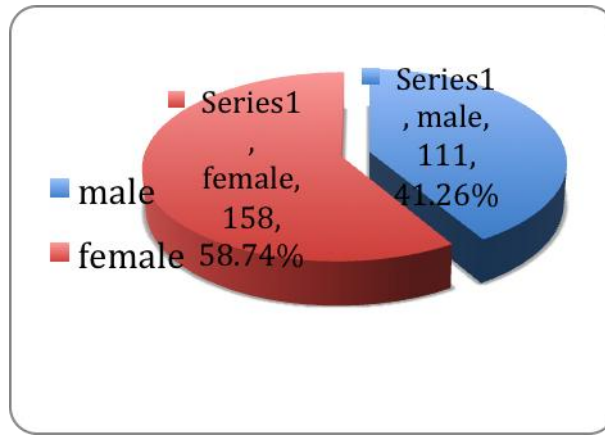
The BLEI was piloted between late 2011 and early 2012 amongst students enrolled in full-time BL courses at KSA universities. Data were gathered using LimeSurvey and evaluated using SPSS Statistics. Thirty-five universities in KSA were either approached directly or through the National Centre for E-learning and Distance Learning (NCEL). Five hundred and fifty students took part in the study (participants) with 269 completing the survey in full (respondents).

#### **4.2.1 Demographic Data**

A demographic section captured general information about each student and whether students had previously been exposed to BL.

##### **4.2.1.1. Gender**

Of the respondents, 41.26% (n=111) were male and 58.74% (n=158) were female. The ratio of female to male respondents was nearly 6:4, which is reasonably consistent with the ratio of enrolled students in KSA (see Figure 4.1).



**Figure 4.1. Ratio of Female to Male Respondents (Students).**

#### **4.2.1.2. Level of study**

Of the 269 respondents, 190 were undergraduate students and 79 were postgraduates (68 studying for master's degrees, 11 working towards PhDs). The majority of respondents (72%) had attended at least one BL course.

#### **4.2.1.3. Place of study**

<b>University</b>	<b>Number of respondents</b>	<b>Percentage</b>
King Saud University	61	23%
Taibah University	51	19%
Imam Mohammad Ibn Saud Islamic University	46	17%
Umm Al-Qura University	41	15%
King Abdul Aziz University	24	9%
Princess Norah University	11	4%
Jazan University	8	3%
Albaha University	4	1%
King Fahd University	3	1%
Qassim University	3	1%
Other	17	6%
<b>Total</b>	<b>269</b>	<b>100%</b>

**Table 4.1. Distribution of Respondents Across KSA Universities (Students).**

#### 4.2.1.4. Course of study

Respondents were studying a wide range of subjects. The majority of these students (nearly 75%) were enrolled in either Arts and Humanities or Science programmes (see Table 4.2).

Subject area	Number	Percentage
Arts and Humanities	115	43%
Sciences	86	32%
Business Administration	32	12%
Engineering	21	8%
Medicine	13	5%
Law	2	1%

**Table 4.2. Distribution of Respondents Across Subject Areas.**

The remainder of this section will present the findings from the analysis of quantitative and qualitative data collected from these HE students. This will be presented under the headings of the elements identified as important through validation of the data collection instrument.

### 4.3. OVERALL RESULTS FOR ALL ASPECTS OF BLEI

#### 4.3.1. Access

ACCESS: Measurement of the extent to which participants are able to utilise a learning management system (LMS) at their university and whether blended learning (BL) supports them in meeting their learning goals and exploring their areas of interest.	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
At the beginning of the semester I can decide which courses I want to enrol in.	39.03	30.11	10.78	9.67	10.41	1.33	3.78
The flexibility of BL allows me to explore my own areas of interest.	24.91	49.07	17.84	5.2	2.97	0.94	3.88
The flexibility of BL through the LMS allows me to meet	29.37	46.84	18.96	4.09	0.74	0.85	4.00

my learning goals.							
I can access the LMS anytime from anywhere.	29	36.06	19.33	10.41	5.2	1.14	3.73
Electronic course contents are as readily available on the LMS outside the classroom as within the classroom.	19.33	40.15	16.36	15.61	8.55	1.21	3.46
<b>Overall average</b>							<b>3.77</b>

**Table 4.3. Results for the First Aspect of BLEI (Access).**

The issue of open-ended questions with questions 2 and 3 exists, however, since the methodology adopted is a mixed method, it was by design the questions are qualitative and open-ended. It was learnt through this study that the answers to these questions could be construed as implausible and inaccurate when obtained through a survey. For future work, interpretive research methodology will be adopted for qualitative data collection and analysis consisting of one-to-one interviews.

The mean value for access was 3.77, representing almost full agreement that the LMS and BL environment is a convenient and competent way of accessing learning activities; such a learning environment provides self-sufficiency related to how and when students intend to access the learning materials. This aspect had the highest standard deviation (.70), but notably, is still on the favourable side of the scale (see Table 4.3).

Students were also given a list of LMS functions and were asked to identify all of the ones they use. This question elicited various responses. Findings are presented by frequency of response (highest to lowest; see Table 4.4).

Through the LMS I can...	Through the LMS I can...		
	N=	N=	
Submit assignments	212	Participate in online forums/chat rooms	131
Access course timetables	195	Communicate electronically with other students enrolled in the same course	128
View the final results	193	Cancel/delete the courses that I don't want to register for or enrol in	125
Send/receive e-mail to/from lecturers and students	191	Participate in evaluation	124
Modify/edit/change my personal information (address, telephone/mobile numbers, mail, etc.)	187	Access information on funding and tuition fees	119
Obtain academic transcripts	183	Participate in seminars	105
Communicate with course lecturers	179	Write exams	92
Access electronic courses content	173	In the class, I can access learning activities using the LMS	86
Register/enrol in courses and modules	164	Virtually attend some lectures	81
View details concerning the results	160	Pay tuition fees	45
Receive registration notifications	153		

**Table 4.4. Results for LMS Functions Students Can Use.**

### Students' Comments

<p><i>'I recommend increasing the electronic content because it is having a positive impact in reducing the attendance hours at university, and it will be limited to the necessary lectures and labs'. Imam U, undergraduate – Medicine</i></p>		<p><i>'A lot of electronic content is not available in the LMS'. Umm Al-Qura University, postgraduate – Education</i></p>
<p><i>'At the universities, there is a lack in the basic requirements for blended learning, such as e-courses or e-content'. Imam U, postgraduate – Education</i></p>	<p><i>'Virtual classrooms could solve the problems of mothers because they could attend their lecture while they are at home with their children at the same time'. KFUPM, postgraduate – Educational Administration and Planning</i></p>	
<p><i>'Distance learning didn't succeed through "JUSUR" and did not find the expected interaction from faculty member, although there is a need for distance learning, especially for students' living far from the universities. 'Taibah University, undergraduate – Business Administration</i></p>		<p><i>'I am a distance learning student using the "JUSUR" LMS and I can say it is a very bad system for course enrolment. 'Taibah University, undergraduate – General Management</i></p>

**Figure 4.2. Students' Comments (Access).**

From the above comments, it can be determined that some students perceive BL at their institution as a 'bad system' which 'lacks in the basic requirements for blended learning'. Increasing electronic content could enhance students' ability to participate from a distance and even make it unnecessary for them to attend campus-based learning activities; this would be especially useful for those with other commitments or who live too far away to participate in campus-based learning activities. The sample published here is a representation of all the factors that impact the success of BL within the KSA context such as economic, social and cultural factors. For instance, in a gender segregated university environment where many female students are also mothers have a different perception of accessibility from male students from premiere university (economically developed part of KSA) and students from rural remote region of KSA perceive BL differently as well. Similarly perceptions vary between the under-graduate and post-graduate students.

Married female students appreciated the flexibility and accessibility of blended learning. For example, female post-graduate student from KFUPM, a married student, said that this type of learning is very appropriate for her situation. This finding indicates that the time flexibility of blended learning provides Saudi female students with a convenient way to continue their education.

However, students expressed positive perceptions about the accessibility to learning materials. They are able to revise, print, and download the lecture notes anytime from home as well as access results, timetable and other electronic resources. These results are similar to the findings of Graham et al. (2005), Osguthorpe and Graham (2003) and Garnham and Kaleta (2002). Flexibility is a positive feature for students irrespective of their responsibilities and duties; however, the participants indicated that it offers an extra advantage for female students in Saudi Arabia as discussed below.

### 4.3.2. Interaction

INTERACTION: This involves the joint use of asynchronous (e.g. forum messages, emails) and synchronous (e.g. live chat, VoIP) technology. The item also asks participants if they find that their environment facilitates collaborative learning.	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
The mode of BL enables me to interact with other students and lecturers asynchronously (e.g. e-mails).	49.44	39.41	8.18	0.74	2.23	0.84	4.33
The mode of BL enables me to interact with other students and lecturers synchronously (e.g. Webchat).	27.51	38.66	19.33	8.55	5.95	1.13	3.73
In the BL environment, I feel more comfortable asking the lecturer about things I do not understand.	35.32	42.38	14.13	7.06	1.12	0.94	4.04
In the BL environment, I feel more comfortable asking other students about things I do not understand.	28.62	40.15	18.96	9.29	2.97	1.04	3.82
In the BL mode, the lecturers respond promptly to my questions.	16.73	38.66	28.25	11.52	4.83	1.05	3.51
In the BL mode, other students respond promptly to my questions.	17.1	42.38	27.14	9.67	3.72	1.00	3.59
I was supported by positive attitudes from my peers to enrol in the modules provided in the BL mode.	14.5	42.38	33.83	6.32	2.97	0.92	3.59
In the BL environment, I regularly participate in self-evaluations.	20.45	43.49	26.39	7.43	2.23	0.95	3.72
In the BL environment, it is easy to organise a group project.	25.65	43.49	17.84	8.92	4.09	1.06	3.78
<b>Overall average</b>							<b>3.79</b>

**Table 4.5. Results for the Second Aspect of BLEI (Interaction).**

Interaction had a mean value of 3.79, and was therefore perceived even more favourably than access. This confirms not only that students must be responsible in their learning activities, but also that other students and lecturers must be

responsible for participating with them and providing sensible and timely feedback. Students realise that they are self-disciplined when engaged in learning in a BL environment; they participate and interact regularly in order to be effectual and prosperous learners in a BL environment (see Table 4.5).

Although it may be argued that the results are higher than the results obtained in similar studies conducted in other parts of the world, a similar study conducted by Alebaikan (2010) on the perceptions of blended learning in Saudi Arabia found that a large number of the students (92%) perceived online discussion as an efficient tool that enhanced communication with their lecturers and this does validate the results of this study as the context of the two studies are the same.

All of the online discussions were asynchronous and textual. The students to resolve the course-related issues, both with their lecturers as well as the peers, used online discussion. Discussion forum enabled them to resolve most of the queries without having to come to school. It also offers them the opportunity to develop their writing skills as a by-product.

### Students' Comments

<p><i>'Most staff use email to: contact students, gather homework'. Umm Al-Qura University, postgraduate – Education</i></p>	<p><i>'I am a distance learning student using the "JUSUR" LMS and I can say it is a very bad system to communicate with staff. Taibah University, undergraduate – General Management</i></p>	<p><i>'The problem in implementing blended learning is dependence on the lecturers and whether they feel technology is important in learning or not'. KSU, undergraduate – Computer Science</i></p>
<p><i>'... We contact each other and staff via emails, Facebook, Skype to do some research together, meet for a group project and finish homework'. Taibah University, postgraduate – Education</i></p>		<p><i>'My university doesn't have the interest to apply education technology to the traditional learning'. University of Qassim, undergraduate – Accounting</i></p>

**Figure 4.3. Students' Comments (Interaction).**

Although the LMS has a great deal of functionality, the qualitative responses indicated that staff continue to use more traditional systems such as e-mail to communicate with students and take in assignments, suggesting that distance learning students may particularly prefer to use these traditional systems. Extensive use of the LMS is perceived to be determined by greater engagement



with the technology on the part of individual lecturers and the university's 'interest in applying educational technology'.

Generally, the tools for posting or replying to messages are easy to learn and use. In addition, using the courses' online discussions is not a new experience for most of the students, who are used to engaging in public online discussions on the Internet. However, using online discussion in learning requires more formal ways of writing and spelling. Generally, Internet users are used to informal ways of communicating in the virtual environment. Therefore, guidelines of proper writing for online learning would be helpful for the development of professional e-learners.

### 4.3.3. Response

Response: This construct measures the extent to which participants have experienced a sense of achievement and their overall level of satisfaction with their BL environment.	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
I could learn more in a BL environment.	28.62	36.43	21.19	7.81	5.95	1.13	3.74
Students' selection of a university will be based on the technologies it provides.	38.29	39.41	13.75	6.69	1.86	0.98	4.06
I feel a sense of satisfaction about the BL environment.	30.48	46.47	16.73	3.72	2.6	0.93	3.99
I feel a sense of achievement in a BL environment.	31.23	41.64	21.19	3.35	2.6	0.95	3.96
I enjoy learning in a BL environment.	36.43	39.41	17.47	4.09	2.6	0.97	4.03
The BL environment held my interest throughout the course.	22.68	43.87	24.16	6.69	2.6	0.96	3.77
The LMS addressed the negative aspects of traditional education.	23.79	47.96	20.82	5.58	1.86	0.91	3.86
There are some difficulties involved in using the LMS.	8.92	26.02	27.88	29.74	7.43	1.10	2.99
In a BL environment, I feel a sense of boredom towards the end of my course of study.	6.69	10.04	24.16	46.1	13.01	1.06	2.51
<b>Overall average</b>							<b>3.66</b>

**Table 4.6. Results for the Third Aspect of BLEI (Response).**

The mean value for Response was 3.66, suggesting that participants enjoyed the mode of learning and are satisfied in the BL environment. The results provided from this scale indicate that students feel a sense of achievement, satisfaction and enjoyment concerning the BL environment. This confirms that students could learn more in this environment, especially when the course developer also relies on the LMS and includes different learning activities to retain students' interest in the course of study. This will prevent students from feeling uninterested towards the end of the course (see Table 4.6).

### Students' Comments

<p><i>'The lecturers are very traditional, and don't know how to deal with technology when they try to use blended learning in the class; they waste lecture time'. Imam U, postgraduate – Management and Planning</i></p>	<p><i>'Applying blended learning is very important and it should be mandatory for staff and students. A lecture in the blended learning environment is more enjoyable and flexible and not boring any more'. Imam U, postgraduate – Education</i></p>	<p><i>'The way of applying blended learning is not as expected, it takes more time in the class, unlike traditional learning'.</i></p>
<p><i>'Blended learning at university is not as expected'. Imam U, postgraduate – Physics</i></p>	<p><i>'This environment of education enriches scientific disciplines'. Umm Al-Qura University, undergraduate – Architecture</i></p>	<p><i>'Some staff members in our faculty trying to activate blended learning environment and develop the educational process, we find learning in this environment more exciting and useful together'. Umm Al-Qura University, undergraduate – Medicine</i></p>
<p><i>'Our university recently implemented blended learning, which facilitates the process of learning; I honestly take advantage of blended learning'. KSU, undergraduate – Business Administration</i></p>	<p><i>'I believe that the Saudi universities still need a lot of support in the field of blended learning'. Imam U, postgraduate -Education</i></p>	<p><i>'In terms of LMS, we just last year start using BlackBoard; it is very good system'. Imam U, postgraduate – Computer Science</i></p>
<p><i>'I hope blended learning is applied to all courses because I have tried two courses in the blended learning environment, and it was very enjoyable and the information was remunerable; there was great concentration on the information'. KSU, undergraduate – Business Administration</i></p>		

**Figure 4.4. Students' Comments (Response).**

It appears that a blended or hybrid approach to learning is not consistently applied in KSA HEIs. One respondent commented that the traditional and electronic aspects are not particularly well integrated, while another said that it did not meet the respondent's expectations. Students did note that they welcomed its introduction, that it is particularly suited to certain subjects and that they enjoy participating in BL courses. Students also identified a need for KSA HEIs to better support its adoption.

#### 4.3.4. Result

<b>Result:</b> Considers whether or not participants have found their BL environment, and particularly their learning management system (LMS), to be structured in a way that helped achieve learning objectives.	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Std. Deviation</b>	<b>Mean</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>		
In the BL environment, the learning objectives of the modules are clearly stated in the LMS as in the classroom	19.7	47.58	19.33	11.9	1.49	0.96	3.72
In the BL environment, activities are planned carefully	12.64	42.38	27.51	13.38	4.09	1.01	3.46
The module content in BL is appropriate for delivery both in the LMS and the classroom	17.1	38.66	24.54	15.99	3.72	1.07	3.49
On the LMS, there is a logical sequence of the module content	13.38	46.47	31.23	8.18	0.74	0.84	3.64
The electronic content shows evidence of originality and creativity in the visual design and layout	17.84	42.01	24.16	12.27	3.72	1.04	3.58
On the LMS, the links related to the electronic content are logical and clearly visible	14.5	47.58	27.51	7.43	2.97	0.92	3.63
I can clearly and completely follow the subject of each lecture on the LMS	22.3	46.47	14.5	11.15	5.58	1.11	3.69
The structure of the module content on the LMS keeps me focused on what should be learned	14.13	49.81	24.54	9.29	2.23	0.91	3.64
The online tests on the LMS enhance my learning process	19.7	44.61	28.62	4.46	2.6	0.91	3.74
The graphics used in the electronic content are appropriate	14.5	46.47	32.71	4.09	2.23	0.85	3.67
The colours used in the electronic content are appropriate	14.5	49.07	29.74	4.83	1.86	0.84	3.70
The use of multimedia materials (e.g. graphics, sound, animation and video) effectively contributes to make the electronic content more interesting	53.53	30.86	11.15	2.97	1.49	0.90	4.32
The 'Help' system on the electronic content is active and effective	12.27	33.09	37.92	12.27	4.46	1.00	3.36
The BL approach and traditional classroom approach are complementary	18.59	42.75	22.68	10.41	5.58	1.08	3.58

<b>Result:</b> Considers whether or not participants have found their BL environment, and particularly their learning management system (LMS), to be structured in a way that helped achieve learning objectives.	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	Std. Deviation	Mean	
	%	%	%	%	%			
Using the LMS has positive impact on the learning environment	18.59	44.98	25.28	6.69	4.46	1.00	3.67	
The LMS provides various, easy and attractive tools to learn	9.67	36.06	30.11	13.75	10.41	1.12	3.21	
Use of education technologies in the classroom shows creativity in the visual design and layout	19.7	46.1	21.19	10.41	2.6	0.99	3.70	
<b>Overall average</b>								<b>3.64</b>

**Table 4.7. Results for the Fourth Aspect of BLEI Aspect (Result).**

Result had a mean value of 3.64, which indicates that students agree that the learning objectives and organisation of the modules are clearly stated in the BL environment materials. In addition, the modules' electronic content and currently available activities have been structured and planned carefully in a logical sequence and show evidence of originality and creativity in their visual design and layout, which assist the students and keep them focused on what should be learned (see Table 4.7).

### Students' Comments

<i>'Universities are not ready for blended learning'. Taibah University, undergraduate – Business Administration</i>	<i>'The only technological tool staff uses in the classroom is PowerPoint, and not in an attractive way'. Umm Al-Qura University, postgraduate – Education and KAU, undergraduate – Information Systems</i>	<i>'Unfortunately, the lack of awareness and lack of interest in this type of learning is one of the most prominent obstacles that prevent achieving the desired objectives'. Umm Al-Qura University, postgraduate – Education</i>
<i>'The way to apply blended learning not as expected; it takes more time in the class, unlike traditional learning'. Umm Al-Qura University, undergraduate – Science</i>		<i>'The university environment generally is not conducive to applying blended learning'. Umm Al-Qura University, postgraduate – Computer Engineering</i>

**Figure 4.5. Students' Comments (Result).**

Students perceived that KSA universities are 'not ready' for BL due to a 'lack of awareness and lack of interest' in a system where staff continue to rely upon more traditional classroom technologies such as PowerPoint presentations and an environment that is not deemed to be 'conducive to applying blended learning'.

#### 4.3.5. Infrastructure

Infrastructure: This item measures the extent to which students believe the infrastructure in their environment facilitates achievement of the course learning objectives.	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
To achieve the academic objectives, there is a wireless network available in most of the university buildings	15.61	21.93	13.01	18.59	30.86	1.48	2.73
At the university, in the labs and library, I can access the Internet through a wireless network	21.19	31.97	13.01	13.75	20.07	1.44	3.2
At the university, Internet access is available in all classrooms	11.52	15.24	13.01	19.33	40.89	1.43	2.37
At the university, there are interactive classrooms	11.15	32.71	20.45	11.9	23.79	1.36	2.96
The technical support services section in the university effectively manages and resolves requests to deal with the technical problems	10.04	28.62	29.74	16.73	14.87	1.21	3.02
The technical support services section at the university responds quickly	9.67	21.93	31.97	20.07	16.36	1.21	2.88
If the lecture cannot be conducted on time or in the scheduled classroom, for any reason, it can be conducted by the lecturer and attended by the students through virtual classes	9.67	24.91	21.93	17.1	26.39	1.34	2.74
In the BL environment, there are some problems related to the electronic content	30.11	39.78	21.93	5.2	2.97	0.99	3.89
In the BL environment, there are some problems related to the availability of technological equipment at the university	40.52	31.6	13.75	10.41	3.72	1.14	3.95
In the BL environment, there are some problems related to the	31.23	32.34	18.59	13.01	4.83	1.18	3.72

<b>Infrastructure:</b> This item measures the extent to which students believe the infrastructure in their environment facilitates achievement of the course learning objectives.	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Std. deviation</b>	<b>Mean</b>	
	%	%	%	%	%			
availability of technological equipment outside the university								
In the BL environment, there are some problems related to software and applications	37.17	37.55	12.27	9.67	3.35	1.09	3.96	
In the BL environment, there are some problems related to training	30.48	27.88	16.36	19.7	5.58	1.26	3.58	
In the BL environment, there are some problems related to the reliability of communication	43.12	30.11	14.87	8.55	3.35	1.11	4.01	
In the BL environment, there are some problems related to the reliability of communication outside the university	30.11	29	14.5	18.96	7.43	1.30	3.55	
<b>Overall average</b>								<b>3.33</b>

**Table 4.8. Results for the Fifth Aspect of BLEI (Infrastructure).**

The infrastructure aspect had a mean value of 3.33, an overall favourable response, but only just above ‘neither agree or disagree’ (3.0) on the BLEI Likert scale. This suggests that the respondents found that the infrastructure available to them only facilitated the achievement of their course learning objectives to a limited degree. This result – the lowest of all five aspects, and the only one where the standard deviation (0.64) was below the mid-point – might provoke a review into the provision of infrastructure to support BL in Saudi universities (see Table 4.8).

Students were also given a list of contents from interactive classrooms and were asked to identify all of those they had seen at the university. This question elicited multiple responses. The findings are presented by frequency of response (highest to lowest; see Table 4.9).

<b>At the university, the interactive classrooms contain...</b>	<b>n=</b>
Computers	169
Sound and video systems	132
SMART board	128
E-podium	55
SMART document camera	41

**Table 4.9. Results for Interactive Classroom Contents.**

### Students' Comments

<i>'There are no Internet services for students but only for staff'. University of Qassim, undergraduate – Accounting</i>	<i>'At the university there is no Internet connection in the faculties' buildings. There are no PCs; these are only provided in the labs. These have bad PCs and devices and are not open all the time for students'. Umm Al-Qura University, undergraduate – Computer Science</i>	<i>'There are not enough technological tools to activate a blended learning environment'. Umm Al-Qura University, undergraduate – Science</i>
<i>'I hope my university will provide wired and wireless networks to implement good blended learning'. KSU, undergraduate – Education</i>	<i>'There are only overhead projectors but staff don't like to use them and some need maintenance'. The University of Qassim, undergraduate – Accounting</i>	<i>'I hope to provide educational tools and network access for students to apply blended learning. Moreover, the students need training courses to use technology with traditional learning'. KSU, undergraduate – English</i>
<i>'I hope that blended learning is applied to solve many of the problems that we face and provide computers for students and lecturers at the university'. KSU, undergraduate – English</i>		<i>'Saudi Arabia is a rich country and has the ability to provide the best in education technology. And I am wondering why we still suffering from a scarcity of electronic devices at the university'. Imam U, postgraduate – Education</i>
<i>'Many lecturers use limited technological tools in the classroom'. Umm Al-Qura University, postgraduate – Education</i>	<i>'There is a need to train students to use technology in learning'. KSU, postgraduate – General Management</i>	<i>'To implement blended learning, there is a need for standards/specifications/training for the staff and students/interactive classrooms'. Imam U, postgraduate – Education</i>

**Figure 4.6. Students' Comments (Infrastructure).**

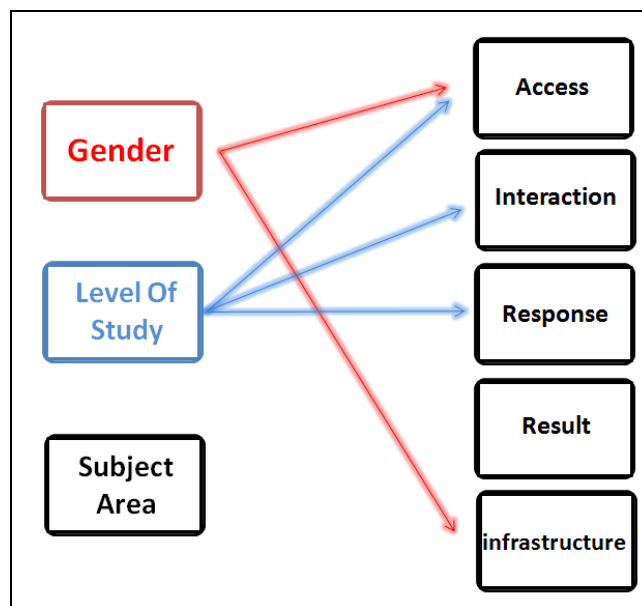
Students perceived the lack of Internet access at their universities (for students as opposed to staff) as problematic, and identified a generally poor BL infrastructure where technological tools and engagement with these tools by staff were lacking. One point was well made by a student, who noted that since

Saudi Arabia is such a rich country, she was unsure 'why we are still suffering from a scarcity of electronic devices at the university'.

Some of the narrative comments made by students refer to other aspects of blended learning than the one in question. The reason being students are not very familiar with such qualitative surveys and have made generic comments on their perceptions about the various aspects of BL.

#### 4.4. THE IMPACT OF GENDER, LEVEL OF STUDY AND SUBJECT AREA ON THE ASPECTS OF BLEI

Analysis of variance (ANOVA) showed that there was no statistical significance in the differences in subject areas for any aspect of the survey, although Figure 4.7 shows where some students were more likely to agree with some items on the scale than others.



**Figure 4.7. The Impact of Gender, Level of Study and Subject Area on BLEI.**

Male and female students showed very similar mean scores for Interaction, Response and Result. Using a t-test, differences by gender were found in the access and infrastructure constructs at the 0.05 level of significance. With an arithmetic mean of 52.27, male students were more likely to 'agree' to the items measured in Access than female students, who had an arithmetic mean of 50.27.



Male students also had a greater tendency to 'agree' to items measured in Infrastructure, where their arithmetic mean was 54.87 compared to the female equivalent of 52.57. Differences by level of education were found in access, interaction and response (0.05 level of significance) using ANOVA and Scheffe's test. For Access, undergraduate students were more likely to 'agree' (51.93) than those studying for a master's degree (49.54) or Ph.D. (46.27). For Interaction, master's students were more likely to 'agree' (36.00) than undergraduate students (33.58). For Response, master's students were more likely to 'agree' (32.75) than undergraduate students (30.98).

#### 4.5. Gender Impact

There is a strong link between gender, culture and other social aspects and learning that is reflected in how people prefer to learn and how they tend to process information (Samovar, Porter & McDaniel 2009). Culture plays a major role in shaping learning experiences, particularly in Saudi Arabia, which is an Islamic country. Similarly, the social environment, in the case of online learning integrated with face-to-face learning, is also exerting some influence on students' perceptions (Alebaikan & Troudi 2010). The gender-based effect is influenced by the culture, social and religious aspects of Saudi Arabia. Therefore, the following section presents a discussion on how gender influences the perceptions of BL in Saudi Arabia.

As mentioned earlier, a marginally larger number of female respondents participated in the survey compared to male respondents (59:41), which reflects the female to male student ratio amongst most universities in KSA. Table 4.32 shows the gender impact on BLEI.

Factor	Gender	No.	Mean	Std. deviation	T value and Sig.
Access	Male	111	52.27	6.60	2.36*
	Female	158	50.27	7.02	
Interaction	Male	111	33.87	5.92	0.57
	Female	158	34.29	5.90	
Response	Male	111	32.03	5.38	1.67
	Female	158	31.04	4.79	
Result	Male	111	61.44	9.86	0.49
	Female	158	62.06	10.42	
Infrastructure	Male	111	54.87	8.19	2.38*
	Female	158	52.57	7.53	
Total	Male	111	234.49	26.16	1.36
	Female	158	230.23	24.66	
	Female	585	108.25	18.30	

**Table 4.10. Gender Impact on the BLEI.**

The table above reflects a significant difference in the satisfaction and perception of BL between male and female students.

**Access:** Male students seem to have more access to LMS resources and perceive BL to have a larger impact on their overall learning experience than the female counterparts. One of the primary reasons for this could be attributed to limited Internet access for females in Saudi due to a gender-segregated society and cultural factors. According to a report from the Communications and Information Technology Commission (CITC 2007), 96% of female Internet users access the Internet from home. This is due to the restricted access for females concerning

public libraries that offer Internet access (CITC 2007). For the very same cultural and social reasons, flexibility of access to learning materials in the BL environment is more beneficial for female students. In particular, married students who have domestic responsibilities would find the flexibility in access extremely helpful in terms of keeping pace with learning anywhere and anytime. Hence, female students are expected to express positive perceptions towards accessibility, in contrast the results reflected in the table. Many studies such as that of Al-Harbi (2011) adhere to the above hypothesis. Therefore, further investigation of the data related to accessibility would enable the provision of more accurate results.

**Interaction:** More female students expressed satisfaction with the interaction aspect of BLEI. This could be largely attributed to the gender-segregated environments that are part of the Saudi culture. It can be seen that BL has the potential to enhance the quality of learning for female students in the gender-segregated environment. The traditional lectures that are typically delivered by male lecturers on live video broadcast can be well supplemented by online tools and resources.

In BL classes, some female students do not ask questions in the presence of other male students or because the instructor is not in the same room to motivate them. Female students who are not otherwise permitted to engage with the male lecturers would find a BL environment more suited to resolving their queries. This offers the advantage of facilitating better interaction between male lecturers and female students in this segregated environment. This finding is similar to that of Albalawi (2007).

**Response:** Male students expressed higher satisfaction and sense of achievement in a BL environment than female students. This result, apart from being influenced by the social and cultural factors, is related to the reasons attributed to Access. Female students with less opportunity to access the Internet develop relatively fewer ICT skills. This is reflected in that the female students do not participate as enthusiastically in the BL processes as their male

counterparts. Therefore, the perceived level of satisfaction and achievement amongst the male students is higher than amongst female students. There are conflicting opinions about this amongst researchers.

In their work, Adas and Abu Shmais (2011) claimed that there is no significant difference in terms of gender even though the highest means were in favour of females. However, Al-Fadhli (2008) reported a strong significance in students' attitudes toward e-learning in accordance with their gender. Female students' mean scores were higher than those of their male counterparts in all areas (items). Female students were obviously positive in evaluating the e-learning elements of the course. Other researchers contended that males liked the BL component more than females (Koohang 2004).

**Result:** Female students expressed higher satisfaction with the role of BL in achieving the learning outcomes. Alebaikan and Troudi (2010) reported that female students maintain a higher grade point average during their studies than their male counterparts. Moreover, female students show more interest in their studies than their male counterparts. Although male students have better access to Internet and better IT skills, they tend to spend a long time browsing the Internet with little focus on study goals. There is an aspect of distraction in the online environment. Supporting this result, a study by Al-Dugairy (2009) reported that a large percentage of students at PNU in Riyadh had experienced poor performance as a result of spending excessive hours on the Internet. Research recommends offering guidance to university students through workshops on the negative aspects of the Internet and training for time management skills.

**Infrastructure:** The results indicate that male students expressed much higher satisfaction with the infrastructure enabling the BL environment and in achieving learning outcomes than female students did. As discussed above, male students have better exposure to the Internet-related skills and are in a better position to appreciate the infrastructure that enables the BL environment. Moreover, male students have easier access to the Internet and hence are able to

evaluate the impact of the access on achieving the learning outcomes in a BL environment.

### Students' Comments

Respondents were asked to add any further comments at the end of their questionnaire. The predominant themes were as follows:

- A desire to support BL initiatives;
- The need for more content to be available through the LMS;
- A perceived lack of enthusiasm by staff to make greater use of technology;
- Insufficient training and support for both staff and students; and
- Difficulty accessing the Internet (and LMS) when off campus, particularly in remote villages.

<p><i>'The staff should be trained to use devices in the classroom'. KSU, undergraduate – Industrial Engineering</i></p>	<p><i>'The time has come for the university administrators to encourage lecturers to use technology'. Umm Al-Qura University, undergraduate – Medicine</i></p>	<p><i>'Training lecturers on the use of modern technologies and encourage them for blended learning'. KSU, undergraduate – Medical Engineering</i></p>	<p><i>'We face problems to use technology in the lectures'. Taibah University, undergraduate – information Systems</i></p>
<p><i>'Staff need training and know-how to deal with devices instead of waiting for technical support'. PNU, postgraduate – Economics</i></p>	<p><i>'Lack of training for the staff and students to use the basic tools and programmes'. Albaha University, postgraduate – Education Technology</i></p>	<p><i>'There are insufficient electronic devices, and if there are devices they do not work. This is a big problem – they must find solutions to get up to date with education technology'. Imam U, undergraduate – Computer Science</i></p>	
<p><i>'Blended learning represents a quantum leap compared to traditional approaches. We need more materials suitable for distance learning and better Internet connection services in and out of the university – there are villages where the net is not available'. Jazan University, undergraduate – English</i></p>		<p><i>'Devices break down with no maintenance. For years, the same projectors have not worked'. Imam U, postgraduate – Management and Planning</i></p>	<p><i>'Blended learning is the best learning environment. But there are some difficulties in using JUSUR'. Taibah University, undergraduate – Art</i></p>

**Figure 4.8. Sample Comments from Student Respondents.**

Most comments relate to infrastructure and echo some of the findings of Almalki's (2011) research. These remarks also show the importance of considering infrastructure as the sum of production and coordination (Steffens & Reiss 2010).

In sum, the greatest concern is infrastructure; from both the survey responses and student comments, this remains a significant barrier to providing effective BL in Saudi Arabia.

#### 4.6. STAFF AND EXPERT RESPONSES

As outlined in Chapter 3, the objectives of this study included an assessment of students and staff and expert responses regarding the overall perception of BL environments, as well as perceptions of both their efficiency and effectiveness. The research was carried out with a view to providing further valuable recommendations for the BL environment in all universities and particularly in KSA. In order to meet these objectives, it was important to set sub-objectives for the data that would be gathered from KSA university staff and experts. These were as follows:

- To assess the impact of a BL approach on education and learning outcomes, and additionally, to assess the extent to which Saudi universities establishing the necessary elements for perfect BL from the point of view of HE staff and education experts;
- To assess the impact of learning management systems (LMSs) and learning content management systems (LCMSs) on participation in education and learning outcomes from the point of view of HE staff and education experts;
- To measure the extent to which staff and education experts believe the infrastructure in the HE environment facilitates the achievement of the course learning objectives on and off campus; and
- To address the most significant obstacles and barriers to effective BL in Saudi universities.

The staff and education expert survey was piloted from late 2011 to early 2012 at KSA universities and the Ministry of Higher Education. Data were captured using LimeSurvey and evaluated using SPSS Statistics.

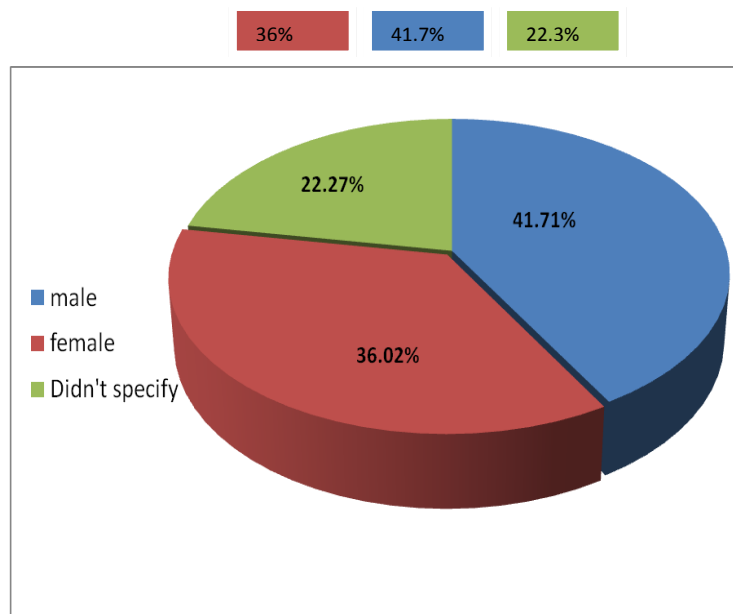
Thirty-five universities in KSA were either approached directly or through the ELC. Two hundred and eleven staff and HE experts took part in the study (participants), with 91 completing the survey in full (respondents).

#### 4.6.1. Staff Demographic Data

A demographic section captured general information about each staff member and education expert and whether he or she had been previously exposed to BL.

##### 4.6.1.1. Gender

For this survey, 41.71% of respondents (88) were male, while 36.02% (76) were female. On the other hand, 22.27% of respondents (47) did not specify their gender (see Figure 4.9).



**Figure 4.9. Female vs. Male Respondents (Staff and Experts).**

Making privacy assurances to participants is one of the requirements of informed consent in survey-based research, where participants are told that their information is anonymous and/or confidential. This study was conducted accordingly with participants being assured of the confidentiality of their information. As Whelan (2007) points out in his study that survey researchers often make distinctions between the concepts of anonymity and confidentiality,

and many past studies have been designed around the premise that anonymous and confidential (i.e., identified) experimental conditions will yield different outcomes. However, are participants are not making the right distinction and are interpreting these two concepts as a single construct?

This may be attributed as a reason for the 22.7% of participants remaining anonymous

#### 4.6.1.2. Place of work

Place of work	Number	Percentage
Princess Norah University	49	23.22%
King Saud University	29	13.74%
Taibah University	14	6.64%
Ministry of Education	14	6.64%
King Abdul Aziz University	12	5.69%
King Khalid University	11	5.21%
Qassim University	8	3.79%
Imam Mohammad Ibn Saud Islamic University	7	3.32%
Umm Al-Qura University	7	3.32%
Al-Jouf University	4	1.90%
King Fahd University	3	1.42%
Alkharj University	3	1.42%
Jazan University	3	1.42%
Taif University	2	0.95%
Najran University	2	0.95%
Institute of Public Administration	2	0.95%
University of Tabuk	2	0.95%
Prince Sultan University	1	0.47%
Islamic University of Madinah	1	0.47%
Not specified	37	17.54%
<b>Total</b>	<b>211</b>	<b>100%</b>

Table 4.11. Distribution of Respondents Across KSA Universities (Staff and Experts).

#### 4.6.1.3. Occupation



<b>Occupation</b>	<b>Number</b>	<b>Percentage</b>
Lecturer	146	69.19%
Dean	7	3.32%
Head of department	7	3.32%
Vice dean	6	2.84%
Technical support services team	3	1.42%
Education experts	2	0.95%
University president	1	0.47%
Not specified	39	18.48%
<b>Total</b>	<b>211</b>	<b>100%</b>

**Table 4.12. Distribution of Respondents Across Occupations.**

#### **4.6.1.4. Academic Level**

<b>Academic level</b>	<b>Number</b>	<b>Percentage</b>
Lecturer	69	32.70%
Senior lecturer	59	27.96%
Principal lecturer	22	10.43%
Professor	14	6.64%
<b>Total</b>	<b>211</b>	<b>100%</b>

**Table 4.13. Distribution of Respondents Across Academic Levels.**

#### 4.6.1.5. Experience

<b>Years of Experience</b>	<b>n=</b>	<b>%</b>
15 years or more	50	23.70%
Less than 5 years	39	18.48%
More than 5 but less than 10 years	38	18.01%
More than 10 but less than 15 years	38	18.01%
Not specified	46	21.80%
<b>Total</b>	<b>211</b>	<b>100%</b>

**Table 4.14. Distribution of Respondents Across Experience.**

#### 4.6.1.6. Utilisation of Blended Learning in Higher Education

<b>Have you ever used BL for teaching full-time students?</b>	<b>n=</b>	<b>%</b>
No, I have never taught full-time students through BL	63	29.86%
Yes, I have taught one or more courses in BL to full-time students	50	23.70%
Yes, I am currently teaching full-time students through BL	36	17.06%
No response	62	29.38%
<b>Total</b>	<b>211</b>	<b>100%</b>

**Table 4.15. Distribution of Respondents Across Utilisation of BLEI.**

Please note that the respondents' numbers across many universities were very low which affected the deduction of results. It may be noted that the validity of the low respondent rates were justified by small number of staff engaged in BL in certain universities and were supported by quantitative and qualitative data. It can be noted that highest number of respondents belong to the lecturer cadre

who are actively involved in BL and offer the first-hand experience on BL delivery and its effectiveness.

Table 4.14 shows that 29.86% of respondents had never taught students through BL; 23.70% had taught one or more courses in BL to full-time students; 17.06% were currently teaching full-time students through BL; and 29.38% did not answer the question.

#### 4.6.1.7. Number of Years Using Blended Learning

<b>I have been teaching full-time students through BL for...</b>	<b>n=</b>	<b>%</b>
1-5 years	121	57.35%
6-10 years	15	7.11%
Not specified	75	35.55%
<b>Total</b>	<b>211</b>	<b>100%</b>

**Table 4.16. Distribution of Respondents Across Number of Years Using BLEI.**

Table 4.15 shows that 57.35% of the respondents had used BL in the teaching of students for 1–5 years; 7.11% had taught BL for 6–10 years; and 35.55% did not answer the question.

#### 4.6.2. Overall Results for All Aspects in the Staff Survey

This section presents the observations on the overall staff survey deducing the perceptions of BL amongst the staff in the HE of KSA region. Observational data enables researchers “to see things that might otherwise be unconsciously missed, [and] to discover things that [participants] might not freely talk about in interview situations” Cohen et al. (2007, p. 396). Observation was used in this study to obtain information that might not be attained by other methods and reveal changes over time. Using the observation method enabled me to better understand the context, discover some elements that were further discussed in the interviews and the focus groups, and to cross-check the information.

Observation can be a participant observation or a non-participant direct observation. Participant observers engage in activities they observe, while non-participant observers deliberately strive to be as unobtrusive as possible in order to avoid bias (Cohen et al., 2007; Wellington, 2000). In this study, non-participant observation was undertaken to avoid being involved in the situation under assessment in order not to influence it.

In this study, a semi-structured observation to explore the students' and the lecturers' experience of the blended courses environment was conducted to allow for in-depth interpretation. "A semi-structured observation will have an agenda of issues but will gather data to illuminate these issues in a far less predetermined or systematic manner" (Cohen et al., 2007, p. 397).

Observations were conducted only in online environment and indirectly through the survey. The online observation was conducted to study the student satisfaction or dissatisfaction and to understand the participants' perceptions of the online instructions. The observations did not focus solely on individual subjects, but rather on the group as a whole. The focus of the online observations was: students' engagement in online instruction, student-lecturer interaction in online discussion, the proper use of the LMS tools and how the lecturers moderated online.

#### **4.6.2.1. The blended learning environment**

To assess the impact of a BL approach on education and learning outcomes, as well as to assess the extent to which Saudi universities have established the necessary elements for flawlessly BL from the point of view of HE staff and education experts (see Table 4.16).

Items	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
In the future, students' selection of a university will be based on the technologies it provides	29.03	39.52	16.13	11.29	4.03	1.11	3.78
In the future, staff's selection of a university to join will be based on the technologies it provides	30.08	41.46	16.26	9.76	2.44	1.03	3.87
The use of learning technologies, along with the traditional method, has a positive impact on learning and teaching process	65.04	29.27	4.07	1.63	0	0.65	4.58
The utilisation of education technology increases the efficiency of traditional learning	45.53	42.28	9.76	1.63	0.81	0.78	4.30
BL is better than traditional learning alone	40.65	37.4	17.07	4.88	0	0.87	4.14
Utilising education technology enhances traditional learning and it is becoming increasingly essential in my classroom	47.97	45.53	4.88	1.63	0	0.66	4.40
Using the Internet during lectures improves traditional learning	35.77	51.22	8.94	4.07	0	0.76	4.19
Using education technologies during lectures improves traditional learning	39.02	52.85	7.32	0.81	0	0.64	4.30
By using education technologies, my teaching skills have improved	40.65	48.78	9.76	0	0.81	0.71	4.28
Applying education technologies along with traditional learning saves time	47.97	39.02	4.07	8.13	0.81	0.93	4.25
If a lecture cannot be conducted on time or in the scheduled classroom, for any reason, it can be conducted by the lecturer and attended by the students through virtual classes	25.2	43.09	24.39	7.32	0	0.88	3.86
During lectures, using education technologies along with traditional learning is indispensable	24.39	52.85	13.82	6.5	2.44	0.93	3.90
At the university, there are particular objectives and strategies used to activate BL	12.2	40.65	33.33	12.2	1.63	0.92	3.50
There are moral or ethical motivations for faculty members to use education technology	5.74	27.87	33.61	22.95	9.84	1.07	2.97

Items	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
There are financial incentives for faculty members to use education technology	9.76	23.58	25.2	27.64	13.82	1.21	2.88
<b>Overall average</b>							<b>3.95</b>

**Table 4.17. Results for the BL Environment (Staff and Experts).**

The mean value for this aspect was 3.95, representing almost full agreement from the HEI staff and experts to the effect that a BL approach has a positive impact on education and learning outcomes. The average means for the questions were between 2.88 and 4.58, representing neither agree nor disagree, agree and strongly agree.

**Mean responses of strongly agree was found for the following six items, arranged in descending order:**

- ‘The use of learning technologies, along with the traditional method, has a positive impact on learning and teaching process’ (4.58);
- ‘Utilising education technology enhances traditional learning and is becoming increasingly essential in my classroom’ (4.40);
- ‘The utilisation of education technology increases the efficiency of traditional learning’ and ‘Using education technologies during lectures improves traditional learning’ had the same arithmetic mean with the same value (4.30);
- ‘Using education technologies, my teaching skills have improved’ (4.28); and
- ‘Applying education technologies along with traditional learning saves time’ (4.25).

Most of the participating lecturers acknowledged the positive effect of blended learning on the development of Higher Education. This result conforms to the study conducted by Alebaikan (2010). They expressed a positive impression of

blended learning and appreciated its flexibility, pedagogy and technical skills improvement. It was described as a suitable type of learning for Saudi society.

Distance learning in general and fully online learning in particular has not been yet accredited in Saudi education. The lecturers reported that the implementation of blended learning broke the ice and introduced an acceptable type of learning that utilizes online learning, as long as it retains face-to-face instruction.

Lecturers expressed their job satisfaction, as they were able to achieve their teaching duties on time and with flexibility. The features of the LMS influenced their experience of time flexibility.

**Mean responses of agree was obtained for the following six items in descending order:**

- 'Using the Internet during lectures improves traditional learning' (4.19);
- 'Blended learning is better than traditional learning alone' (4.14);
- 'During lectures, using education technologies along with traditional learning is indispensable' (3.90);
- 'In the future, staff's selection of a university to join will be based on the technologies it provides' (3.87);
- 'If a lecture cannot be conducted on time or in the scheduled classroom, for any reason, it can be conducted by the lecturer and attended by the students through virtual classes' (3.86);
- 'In the future, students' selection of a university will be based on the technologies it provides' (3.78); and
- 'At the university, there are particular objectives and strategies to activate blended learning' (3.50).

**A mean response of *neither agree nor disagree* was found for the following two items:**

- 'There is a moral motivation for faculty members to use education technology' (2.97); and

- ‘There are financial incentives for faculty members to use education technology’ (2.88).

By looking at the standard deviation in the previous question, we find that the item ‘There are financial incentives for the faculty members to use education technology’ had the highest standard deviation (1.21), while ‘Using education technologies during lectures improves traditional learning’ had the lowest standard deviation (0.64).

HEI staff and experts were also given a list of necessary elements to establish a perfect BL environment in HE, and were asked to identify the appropriate option for each item according to the current status of their university. This question therefore elicited one option for each item (see Table 4.18).

The following are necessary elements to establish a perfectly BL environment in HE:	Strongly available	Available	Not available	Std. deviation	Mean
	%	%	%		
The human element (skills related to the teacher and student)	19.51	65.85	14.63	0.59	2.05
Technical element (the infrastructure of e-learning)	21.31	58.2	20.49	0.65	2.01
Administrative element (component of setting goals and strategies)	16.39	45.9	37.7	0.71	1.79
Social element (component of the culture of the educational community)	10.57	52.03	37.4	0.64	1.73
Economic element (component of the budget and financial incentives)	21.14	41.46	37.4	0.75	1.84
<b>Overall average</b>					<b>1.88</b>

**Table 4.18. The Necessary Elements, which Must Be Provided by Universities for BLEI.**



The response to this question had a mean value of 1.88, indicating that the necessary elements for establishing a perfectly blended learning environment in HE are only just above 'available'. These elements can be arranged by descending according to the mean availability as follows:

- The human element (skills related to the teacher and student) (2.05);
- The technical elements (the infrastructure of e-learning) (2.01);
- The economic element (the budget and financial incentives) (1.84);
- The administrative element (setting goals and strategies) (1.79); and
- The social element (the culture of the educational community) (1.73).

#### **1.6.2.2. LMS and LCMS Effect's**

The purpose of this section is to gauge the familiarity of HE staff with LMS and LCMS features. Understanding the concept of blended learning could have influenced identifying and employing adequate pedagogical theories in teaching blended courses. Converting regular courses to blended courses means not only converting the contents to be digital contents but also utilizing the strength of both instruction types to promote a successful teaching and learning environment. This could not be achieved without a thorough understanding of the concept of the new learning approach. As per studies conducted in 2010, the lecturers were new to online teaching and the selected model was imposed on them.

The administration presented the blended format as a solution for the increase in the number of students in the College. Although the pedagogical advantages of the concept of blended learning are expected to be part of the reasons for introducing blended learning, these influencing factors were not mentioned to the lecturers but were discovered by the lecturers from their experience. The lecturers' satisfaction consequently affects their students' satisfaction. Kaleta et al. (2005) stress the importance of managing students' expectation and the fact that lecturers should introduce the rationale of blended learning to their students. This would not be achieved unless the lecturers understand the

concept themselves. Considerably poor understanding of the concept possibly has a strong impact on lecturers' acceptance and views.

**The second aspect of the staff survey involved was assessing the effects of LMS and LCMS on participation in education and on learning outcomes from the point of view of HE staff and expert.**

For **Question 1**, HEI staff and experts were given a list of functions of LCMS and LMS and were asked to identify all of the functions they could use. Therefore, this question elicited multiple responses. The findings are presented by frequency of response (highest to lowest; see Table 4.18).

Through the LCMS and LMS, I can:	N=	Through the LCMS and LMS, I can:	N=
	Receive assignments		95
Post the mid-term and final results	86	Participate in seminars	64
Provide the course's content to users electronically	85	Manage courses and modules	57
Get a list of enrolled students in courses and modules	85	Engage in asynchronous online teaching	47
Send messages and notifications to staff	84	Teach students synchronously, both with the classroom and online	36
Print course timetables	80	Manage staff	19
Manage students	80		

**Table 4.19. Results for LCMS and LMS Functions Staff Can Use.**

For **Question 2**, HEI staff and experts were given a list of functions on LCMS only and were asked to identify all of the functions they can use. This question elicited multiple responses. The findings are presented by frequency of response (from highest to lowest; see Table 4.19).

Through the LCMS, I can:	N=	Through the LCMS, I can:	N=
	Create and publish web learning documents		82
Upload prepared files	78	Carry out exam administration	56
Create exam questions	76	Create a database specifically for the college, faculty members and students	49
Reuse content	74		

**Table 4.20. Results for LCMS Functions Staff Can Use.**

In **Question 3**, HEI staff and experts were given a list of types of digital content and were asked to identify all the types they can use in the BL environment. This question elicited multiple responses; the findings are presented by frequency of response (from highest to lowest; see Table 4.20).

I can create the following type(s) of digital educational content:	N=
Audio clips	65
Video clips	61
HTML docs	42
Flash animation	34

**Table 4.21. Results for Digital Content Staff Can Use.**

For **Question 4**, HE staff and experts were given a list of functions of LMS related to course information and were asked to identify all of the functions they could use. This question elicited multiple responses. The findings are presented by frequency of response (from highest to lowest; see Table 4.21).

<b>Through the LMS, I can provide the following course information:</b>	<b>N=</b>
Course description	97
Course requirements	94
Course dates	91
Course activities	89

**Table 4.22. Results for Course Information Functions Staff Can Use Through the LMS.**

For **Question 5**, HEI staff and experts were given a list of functions of LMS related to communication, and were asked to identify all of the functions they can use. This question elicited multiple responses. The findings are presented by frequency of response (from highest to lowest; see Table 4.22).

<b>Through the LMS, I can communicate with other university members and students via:</b>	<b>N=</b>
Internal messaging and emails	98
University online forums	67
Chat rooms	46
Virtual classrooms	34

**Table 4.23. Results for Course Communication Functions Staff Can Use Through the LMS.**

In **Question 6**, HEI staff and experts were given a list of functions of LMS related to testing and assessment and were asked to identify all of the functions they can use. This question therefore elicited multiple responses. The findings are presented by frequency of response (from highest to lowest; see Table 4.23).

<b>The LMS allows me to do testing and assessment, where I can:</b>	<b>N=</b>
Select question types – multiple choice, numerical, matching, ordering	75
Generate question pools for reuse	70
Create surveys	70
Report and analyse results	52

**Table 4.24. Results for Test and Assessment Functions Staff Can Use Through the LMS.**

For **Question 7**, HEIs staff and experts were given a list of functions on LMS and were asked to identify all of the functions they can use through their personal computer. This question therefore elicited multiple responses. The findings are presented by frequency of response (from highest to lowest; see Table 4.24).

<b>Through my PC I can use the LMS to:</b>	<b>N=</b>	<b>Through my PC I can use the LMS to:</b>	<b>N=</b>
Modify/edit/change my personal information (address, telephone/mobile numbers, mail, etc.)	75	Create a personal profile	68
List selected courses	73	Set office hours	61
Follow internal university news	69	View the calendar	59
Write personal notes	55	View a listing of selected groups	41

**Table 4.25. Results for LMS Functions Which Staff Can Use Through a PC.**

For **Questions 8 and 9**, HEI staff and experts were asked to choose the appropriate answer regarding LMS. This question elicited only one response (strongly agree, agree, neither agree nor disagree, disagree or strongly disagree; see Table 4.25).

Item	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
Through the LMS, I can get feedback from students	21.7	45.28	24.53	6.6	1.89	0.93	3.78
The LMS supports and enhances full-time students' ability to learn outside the classroom	22.64	48.11	22.64	5.66	0.94	0.87	3.86

**Table 4.26. Results for More Functions Staff Can Use Through the LMS.**

The mean values for these two items suggest that participants can obtain feedback from students and are satisfied with using the LMS with students outside the classroom. These results confirm that the LMS has a good impact on the BL environment.

#### 4.6.2.3. Infrastructure

The third aspect of the staff survey involved measuring the extent to which staff and education experts believe that infrastructure in the HE environment facilitates achievement of the course learning objectives on and off campus.

Item	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
To achieve the learning objectives, the university provide wired Internet connections on campus	16.84	41.05	18.95	13.68	9.47	1.20	3.42
The technical support services sections at the university effectively receive and solve requests to deal with technical problems	13.68	41.05	31.58	8.42	5.26	1.01	3.49
The response of the technical support services section at the university is high	9.47	36.84	31.58	14.74	7.37	1.06	3.26
The learning content management	13.83	39.36	29.79	11.7	5.32	1.04	3.45

system (LCMS) and learning management system (LMS) can be accessed at anytime from anywhere							
At the university, there are SMART/interactive classrooms	12.77	47.87	19.15	12.77	7.45	1.10	3.46
There is a special budget allocated by the university to activate BL	5.32	37.23	44.68	4.26	8.51	0.95	3.27
<b>Overall average</b>							<b>3.39</b>

**Table 4.27. Results for Infrastructure (Staff and Experts).**

For items 2–6 and 10, the score was calculated according to a gradient (strongly agree, agree, neither agree nor disagree, disagree or strongly disagree; see Table 4.26 above), while questions 1, 7, 8 and 9 were calculated as yes or no (see Table 4.27, Table 4.28 and Table 4.29, below).

The mean value for items 2–6 and 10 related to infrastructure was 3.39, an overall favourable response; this suggests that respondents found the infrastructure available to them facilitated the achievement of their course learning objectives to a limited degree.

Just over half of respondents (57.89%) either strongly agreed or agreed that ‘To achieve the learning objectives, the university provides a wired Internet connection on campus’. The responses to this question must be interpreted in light of the responses to the question of whether or not universities provide access to wireless Internet. Over 40% of respondents agree that the universities have provided ample access to wired or wireless Internet in order to access the blended learning resources. However, it may be noted that this Internet infrastructure is not uniform across KSA. If even wired Internet services are not yet seen to be widely provided across HE in Saudi Arabia, this might provoke a review into the provision of infrastructure to support BL in Saudi universities.

Staff and experts were also given a list of options related to the Internet-connected interactive classroom contents, learning tools and technologies that can be used in the BL environment and were asked to identify all of the options they use. Thus, these questions elicited multiple responses. The findings are

presented by frequency of response (from highest to lowest; see Table 4.27, Table 4.28 and Table 4.29, below).

<b>To achieve the learning objectives, the university provides wired Internet connection in:</b>	<b>N=Yes</b>
Computer labs	64
Classrooms	43
Learning resource centres	37

**Table 4.28. Results for Wired Internet Connections.**

<b>At the university, the SMART/interactive classrooms contain:</b>	<b>N=Yes</b>
SMART Board	68
Computer	62
Data show projector	59
Sound and video systems	53
E-podium	38
SMART document camera	17

**Table 4.29. Results for Interactive Classroom Content Which Staff Use.**

<b>To activate BL with full-time students, I use certain tools such as:</b>	<b>N=Yes</b>
Computers	80
Data show projector	67
SMART Board	40
Mobiles – to provide students with timetables, lecture times or lecture content	18
SMART document cameras	7

**Table 4.30. Results for the Tools Staff Use in the BLEI.**



To activate BL with full-time students, I use technologies such as:	N=Yes
	Text messages (SMS)
Digital libraries	33
Online recorded lectures	29
Social networks such as You Tube, Facebook, Twitter	24
Blogs	18
Online live broadcasts	15

**Table 4.31. Results for Technologies Staff Use in the BLEI.**

#### 4.6.2.4. Obstacles to the Adoption of Blended Learning

The fourth aspect in the staff and education expert survey was designed to address the most significant obstacles restricting the greater adoption of BL in Saudi universities (see Table 4.31).

In the BL environment, there are some problems related to:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Std. deviation	Mean
	%	%	%	%	%		
The availability of technological equipment	17.58	30.77	12.9	30.77	8.79	1.29	3.18
Communication reliability	17.58	30.78	12.08	30.77	8.79	1.29	3.18
Electronic content	26.37	34.07	17.58	18.68	3.3	1.16	3.62
Software and applications	14.29	36.26	18.68	26.37	4.4	1.14	3.30
Training	28.57	36.26	13.19	17.58	4.4	1.19	3.67
<b>Overall average</b>							<b>3.39</b>

**Table 4.32. Results for Obstacles to the Adoption of BL (Staff and Experts).**

The fourth and final aspect discussed by HE staff and experts had to do with the most significant obstacles and barriers to the application of effective blended learning in Saudi universities. This aspect had a mean value of 3.39, an overall favourable response, but only just above 'neither agree nor disagree' on the 5-point Likert scale. This would suggest that respondents found there are problems related to implementing effective BL related to technological equipment, communicative reliability, electronic content, software and applications and training. This result, whose standard deviation was between 1.14 and 1.29, might provoke a review into obstacles to the provision of blended learning in order to support BL in Saudi universities.

#### 4.7. STAFF COMMENTS

Educators were given the opportunity to provide qualitative insights in the free response section of the questionnaire. Many had not used BL at all, or only to a limited extent. Interestingly, there did not seem to be much difference between usage levels based on how long a member of staff had worked at a particular institution, but from those who provided free responses, more females than males reported that they had never used BL previously (see Table 4.33). A content analysis on free responses was undertaken, with themes grouped together in the first column to show the various levels of staff engagement with BL. The remaining columns present aggregate quantitative totals derived from qualitative responses, and indicate the years of teaching experience of each group of respondents.

Engagement with BL	Male	Female	Years of teaching experience				
			1-5	6-10	11-15	16+	Not specified
No use of BL	9	15	9	6	4	4	1
Only attended a training course	1		1				
Limited engagement	3	2	3		1	1	
Extensive engagement	1	3	1	1		2	
We need BL	4		2	1		1	

**Table 4.33. Staff Engagement with BL.**

Two comments are significant enough to report in their entirety. One lecturer commented that *'the students don't have good skills to learn in a blended learning environment. Especially to learn Chemistry'*. This is interesting given that students commented on how suitable BL was to the study of scientific subjects. Another lecturer noted that *'I teach female students via university internal podcast'*, which, as noted by the students, also points to the suitability of BL to serve the needs of female students at a distance.

Reflecting a question asked of students about the attraction of BL when it comes to choosing an HEI, staff comments identified the following perceptions related to whether or not staff's selection of a university to join will be based on the technologies it provides in the future:

- *'It depends on the technologies offered at the universities';* and
- *'Most staff cares about financial matters'.*

Indeed, one respondent commented that greater adoption of BL might be off-putting for prospective staff: *'There is resistance from the staff members when it comes to accepting blended learning because of the additional burden'*.

Other notable staff comments about blended learning were as follows:

- *'It is not always positive; when not used seriously, it will have a negative impact';*
- *'Surfing on the Internet in a lecture takes time and it is not suitable for all courses';*
- *'Traditional education is important to disseminate information';*
- *'E-learning is important to keep up with the new generation';*
- *'Blended learning helps the student in learning, understanding, and creativity';*
- *'It does not improve teaching skills; it can only provide the students with an interactive environment, which will somehow engage the students in the learning process as well as expose them to real experience, particularly with science majors';*
- *'The use of learning technologies take a lot of time, while traditional learning often depends on just dumping and indoctrination, and this does not take a long time. On the other hand, producing electronic content requires additional time, particularly if the content is related to sciences';*  
and
- *'The goals are clear but there is a need to educate, train and clarify the importance of these strategies to the staff'.*

Some believed that students were not ready for the introduction of BL, with one commenting, *'Students are not interested in learning management system and find it difficult to deal with'.*

In terms of incentives, staff also noted a difference in practices adopted across various HEIs in KSA. Some were incentivised financially, for example, *'the university gives those who use education technology 25%'*, and in another case, *'there is a financial incentive for all who have a website'*. In contrast, in other HEIs, there were no incentives at all.

One comment summarises the more positive perceptions of staff about the need to adopt blended learning:

*'Blended learning is essential in the classroom as it motivates the "digital natives" to be more interested in their courses and it caters to the different learning styles of the students'.*

It is important the lecturers are given sufficient targeted training to be able to translate their work into online courses thus freeing themselves from many of the tasks (both administrative and didactic) that are brought about by large class tuition. It is not enough to merely show them how to use the technology but rather specific activities that focus on the problems inherent in large classes should be provided. This would have the extra advantage of engaging the students in the use of an online environment from their first year of university study. It must be said that previous research work with students has indicated that they like the use of the online environment as a repository (Cavalli et al 2005).

#### 4.8. SUMMARY

This chapter presented the data analysis reflecting the students and staff's perceptions of BL. The results are particularly focused on the student satisfaction with BL. Sinclair (2011) reported three compelling reasons for taking an interest in student satisfaction, namely the instructor, enabling technology and the course management. Based on the existing studies, there is evidence that student satisfaction is positively related to retention and a decision to take one or more additional courses (Booker & Rebman 2005). Moreover, student satisfaction is important because satisfied students represent a public relations asset for a college or university. If students are viewed as customers of college education, their satisfaction is important for recruitment efforts. Therefore, there is a need for more understanding of factors that affect student satisfaction with BL. This chapter offered insight into students' satisfaction with BL and further investigated staff perceptions.

The chapter presented the results of the BLEI questionnaire, which was administered to HE students in Saudi Arabia, supplemented by qualitative data gathered from a 'free response' section on the survey instrument. Insights were also offered from quantitative and qualitative data gathered from staff and education experts in HE in Saudi Arabia. The next chapter will discuss the analysis of these findings in light of the earlier literature review.

## CHAPTER 5: DISCUSSION

### 5.1. INTRODUCTION

This chapter will consider the findings outlined in Chapter 4 of this thesis, and show how these findings either support or contradict the extant literature reviewed in Chapter 2. The chapter will be structured by first considering each aspect researched using the BLEI, supplemented with consideration of the qualitative responses from students. Following this, staff responses will be considered.

### 5.2. SUMMARY OF ANALYSIS OF STUDENTS' QUANTITATIVE AND QUALITATIVE DATA

#### 5.2.1. Access

Access measures the extent to which participants are able to utilise an LMS at their university, as well as whether BL supports them in meeting their learning goals and exploring their areas of interest. The mean value for access was 3.77, representing almost full agreement that a BL environment is a convenient and effective way of accessing learning activities and that such a learning environment provides self-sufficiency in allowing students to decide how and when to access learning materials. This feature had the highest standard deviation (.70), but notably, it was still on the favourable side of the scale. Cooner (2010) found that BL seemed to overcome a number of obstacles to effective learning in large groups by providing flexibility for learning, engaging exercises and context-specific activities that students seemed to be able to relate to both personally and professionally. Rather than simply seeking to 'deliver knowledge', the use of technology within the design was focused on exploring ways in which the activities could enhance the students' learning experiences through the constructivist principles of 'emergent learning'.

Qualitative responses included the view that distance-learning students may perceive BL at their institution to be a 'bad system', with a 'lack in the basic

requirements for blended learning'. Increasing electronic content could enhance students' ability to participate from a distance, and even mean that they do not have to attend campus-based learning activities, especially when they have other commitments or live too far away to participate in such activities.

According to the results for Access, as well as results from other researchers like Bothma (2011), Keengwe and Georgina (2011), Kusen and Bozic (2012) and Meenakumari, Antony and Vinay (2013), LMSs have resolved many issues by moving traditional learning courses towards multi-method learning. This is because the LMS has been recognised as the most accepted ICT-based tool in the current education system.

The average response of 3.77 was found when measuring the extent to which participants are able to utilise an LMS at their university, as well as whether BL supports them in meeting their learning goals and exploring their areas of interest. This reflects some strong feeling: The majority of students in the sample indicated a high level of agreement. While we would expect such results for the access element, it is pleasing to see that students' responses concerning the benefits of the LMS tie in with many of the reasons universities have introduced such learning technologies.

The highest average score (4.00) for the Access aspect was found for the statement 'The flexibility of blended learning allowing me to meet my learning goals'. On the other hand, the statement 'The electronic course content is as available on the LMS outside the classroom as it is in the classroom' exhibited a lower score than most responses, with an average of 3.46. However, while a relatively low evaluation was evident in this survey, this does bear out the findings of Staker and Horn (2012), who identified that a key element of BL is giving students control over not only how they learn and at what pace, but also where they learn; this allows students to continue learning outside of a traditional classroom-based environment.



It appears evident from a list of LMS functions that students tend to use the LMS more heavily for tasks where they have no choice as opposed to activities that can be undertaken in different ways (i.e. not only via the LMS), such as paying tuition fees and even participating in LMS-based learning activities in traditional class-based sessions. The findings showed the highest frequency of responses for the item 'submit assignments', with 212 responses out of 269, and the lowest was for 'pay tuition fees', with 45 responses.

It must be recognised that if students are not, for example, offered the facility or encouraged to pay tuition fees using the LMS, they will not do so. On the other hand, if an institution promotes the LMS as a method of completing such a task, or if this is the only way to submit an assignment or access a course timetable (195 responses), then students will be more encouraged and more likely to use these functions. Notably, only 86 students mentioned accessing learning activities through the LMS. This level of LMS use reflects that evidenced in other Arab countries, where HEIs tend to focus more on repurposing traditional functions and course content, moving from paper-based to web-based instruction, rather than creating wholly new learning environments within the LMS (Demiray 2010).

As identified in the introduction to this thesis, there is already a disparity between required learning hours and awarded credits, even between HEIs in the same country. Traditional campus-based learning activities can require a great deal of student time expenditure (Shepherd 2012). However, as Dalsgaard and Godsk (2007) found, a move to BL can not only cut down on lecturing time, but can also change the role of the lecturer. This is especially true when considering the transformation of a traditional curriculum-based and lecture-based module into a fully blended learning experience designed from a social constructivist approach, where the lecturer becomes a guide for more student led and self-directed study. The concept of Guide on the side a concept originally proposed by Smith (1993) was further investigated by Dalsgaard and Godsk's (2007) research found that reducing lecture time had no negative effect on the module,

and that students performed better in comparison with previous, more traditional approaches.

### **5.2.2. Interaction**

Interaction has to do with the use of asynchronous (e.g. forum messages, emails) and synchronous (e.g. live chat, VoIP) technology. It also asks participants if they find that their environment facilitates collaborative learning. In this study, than Access. This confirms not only that students must be responsible for their learning activities, but also that other students and lecturers must be responsible for participating in these activities and providing sensible and timely feedback. Students realise that they are self-disciplined when they engage in learning in a BL environment; they also participate and interact regularly in order to become effectual and prosperous learners in such an environment.

A study conducted by Harnisch and Taylor-Murison (2012) supported this idea. According to their findings, students could be reluctant to engage with university tutors on an LMS. Thus, the module tutor spent time rushing students to remind them of deadlines and request information about their progress, whereas students reported that they found no reason to communicate with their tutor, as they had all the support that they required in class. Some students also reported that they 'lacked confidence' in contacting their university tutor because they did not know him or her well. Whilst it is reassuring that the students were well supported in school, in order to facilitate effective communication and reduce barriers to transition, students need to experience responsibility for academic interaction, which will be expected in HE. In order to develop the right HE skills, intervention is required to facilitate communication through tasks and lessons learned. This could also inform tutor engagement with the curriculum, particularly for any first-year experience and retention initiatives.

Although an LMS has a great deal of functionality, qualitative responses from students indicated that staff continue to use more traditional systems such as e-mail to communicate with students and receive assignments, and particularly that distance learning students may also prefer to use these traditional systems.

Bersin (2000) also notes the facility of BL in allowing both synchronous and asynchronous interaction. Student responses to the BLEI also noted that they use both, but mostly asynchronously, with 88.85% of respondents either strongly agreeing or agreeing that 'the mode of blended learning enables me to interact with other students and lecturers asynchronously (e.g. e-mails)'; on the other hand, only 66.17% of respondents either strongly agreed or agreed that 'the mode of blended learning enables me to interact with other students and lecturers synchronously (e.g. Webchat)'. This also supported Demiray's view (2010) that, especially in the Arab world, the BL environment is not entirely becoming a new learning experience, but is rather transferring traditional functions to web-based ones. However, as e-mail rapidly replaces face-to-face or telephone interaction between students and lecturers, perhaps in the future, synchronous interaction via the LMS will become more widely adopted.

Great use of the LMS is perceived to be determined by individual lecturer engagement with the technology, as well as the university's 'interest in applying educational technology'. This supports the Kim and Bonk's (2006) view: They noted that many HEIs are now adopting a strategic approach to the adoption of educational technology.

As mentioned by Melton, Graf and Chopak-Foss (2009), a key feature of BL is that it retains at least some elements of face-to-face interaction. Interestingly, 77.7% of respondents either strongly agreed or agreed with the statement that 'In a blended learning environment, I feel more comfortable asking the lecturer about things I do not understand', which may mean that factors inhibiting student and staff interaction in a face-to-face environment are removed in a BL environment. This points to some of the advantages of the effective introduction of BL. As outlined by Browning and Lefte (2004), such a measure will combine both electronic and face-to-face elements. It has also been found that students may repeatedly access learning resources delivered in various formats. For example, Dalsgaard and Godsk (2007) found that students may see a PowerPoint presentation in a traditional campus-based lecture and then also review it via the

LMS. Other students repeated purely online activities a number of times, which would be less easy to do in the more traditional learning environment.

Interestingly, it seems that peer attitudes towards BL are not only positive; instead, it is also the case that students who have had a positive BL experience go on to promote this mode of learning to others, with the highest response of 42.38% recorded for those agreeing with the statement that 'I was supported by positive attitudes from my peers to enrol in modules provided in blended learning mode'. Even if pure online courses are allowed in some countries, it was also found that many students preferred to retain some form of face-to-face teaching while taking advantage of e-learning (Lee & Chan 2007, as cited in Chia-Wen, Pei-Di & Meng-Chuan 2011).

### **5.2.3. Response**

Response measured the extent to which participants had experienced a sense of achievement and their overall level of satisfaction with their BL environment. The mean value for response was 3.66, suggesting that participants enjoyed the mode of learning and were satisfied in the BL environment. The results of this scale indicated that students felt a sense of achievement, satisfaction and enjoyment about the BL environment.

This result confirms that the students could learn more in a BL environment, especially when the course developer also relies on the LMS and includes different learning activities to retain students' interest to prevent loss of interest towards the end of the course. This points to another benefit of a developed approach to BL. As Pereira *et al.* (2007) found, the management of assessments in a way that is better suited to students requires an online environment because, especially when resits are undertaken in the holiday period, there is less traditional campus-based support. In contrast, the student may still access a wide range of resources online.

Harnisch and Taylor-Murison's (2012) study found that student responses were most positive and attrition was lowest where students were able to identify synergy between their in-school curriculum and their module, as they could see knowledge development as something that they could apply in their current studies. Ensuring that a tangible linkage exists between curricula has several benefits. The HE experience becomes contextualised and relevant rather than an 'add on', an extension of study rather than an experience is also advantages in universities and schools developing an experiential understanding of similarities and differences between curricula, thereby mapping academic content at the point of transition.

It appears that a blended or hybrid approach to learning is not consistently applied in KSA HEIs. In the qualitative analysis, one respondent was found to comment that traditional and electronic aspects are not particularly well integrated; another stated that it did not meet the students' expectations. Students did note that that they welcomed the introduction of the blended approach, that it was particularly suited to certain subjects, and that they enjoyed participating in BL courses. Students also identified a need for KSA HEIs to better support the adoption of this method.

#### **5.2.4. Result**

Result related to whether or not participants found their blended learning environment – and particularly their LMS – to be structured in a way that helped to achieve learning objectives. This parameter had a mean value of 3.64, indicating that students agreed that the learning objectives and organisation of the modules were clearly stated in the BL environment materials. In addition, the modules' electronic content and activities were structured and planned carefully in a logical sequence, and showed evidence of originality and creativity in their visual design and layout, thereby assisting the students and keeping them focused on what should be learned. This result conformed with Chia-Wen, Pei-Di and Meng-Chuan's (2011) findings; these researchers showed that students in

the three groups they studied agreed in 70.27% to 80.56% of cases that BL is a 'very helpful' approach for learning. However, while 75.84% of students in this study either strongly agreed or agreed that they enjoy learning in a blended environment, that using the LMS has a positive impact on the learning environment (63.57%) and that the LMS addresses the negative aspects of traditional education (71.75%; Safara 2008), 34.94% of respondents reported that there can be problems with the usability of the LMS itself. On the other hand, a similar percentage of respondents (37.17%) either disagreed or strongly disagreed with the statement that 'There are some difficulties encountered while using the LMS', although the highest proportion (37.92% of respondents) neither disagreed nor agreed with the statement that 'The "Help" system for the electronic content is active and effective'.

The Response aspect also gave a particularly notable finding with regard to student boredom. The highest proportion of respondents (43.87%) agreed with the statement that 'The blended learning environment held my interest throughout the course', and a somewhat higher proportion (46.1%) disagreed with the statement that 'In the blended learning environment I feel a sense of boredom towards the end of my course of study'. This could point to another positive impact of the adoption of BL – that students are better engaged throughout their studies than in a traditional classroom-based learning environment, even when courses are not wholly re-engineered for the online environment (Rhema & Miliszewska 2010).

A study conducted by Hye-Jung and Cheolil (2012) showed that students clearly differentiated quantity of contributions from quality of contributions. In a BL module evaluated by peers, students evaluated informative messages – such as resources or references – as being related to the quantity of the work, while intellectual messages were related to the quality of the work. Although the students perceived intellectual messages to be related to the quality of their teamwork, however, they valued social and managerial contributions more highly than cognitive contributions in their comprehensive evaluations.

In their study, White and Sykes (2012) evaluated the effectiveness of BL methods for anatomy and physiology courses, which are typically considered complicated subjects to handle. The evaluation data in their study consisted of student outcomes from the hybrid mode of delivery that were compared with previous cohorts where only traditional methods were used. The study also considered student satisfaction surveys amongst those undertaking BL modules. The results from their study indicate improvement in the performance of multiple-choice exams, while the regular exams showed no significant changes. The survey indicated a high level of satisfaction amongst the students, with overall quality of the module, including the teaching methods and support provided by the BL environment. Therefore, this study suggests that a well-designed BL system, with good academic content and interactive exercises are motivating for learning and yields as good, if not better, outcomes as traditional lectures.

Qualitatively, students perceived that KSA universities are 'not ready' for BL due to 'lack of awareness and lack of interest' in the current system, where staff continue to rely upon more traditional classroom technologies such as PowerPoint presentations, and in an environment that is not deemed to be 'conducive to applying blended learning'. Again, this is surprising for such a relatively rich country as KSA, compared with, for example, the poorer nation of Jordan, where Hajaya (2010) has found many obstacles to the adoption of BL.

Interestingly, when students rated the item 'If the lecture cannot be conducted on time or in the scheduled classroom for any reason, it can be conducted by the lecturer and attended by the students through virtual classes', the highest proportion of respondents (26.39%) strongly disagreed with the statement, with a further 17.1% disagreeing. However, when compared with staff responses, the highest proportion of respondents (43.09%) agreed with the statement, with a further 25.2% strongly agreeing. While this discrepancy between staff and student responses is both notable and interesting, it is impossible to ascertain whether this is because even though classes can be delivered virtually, they simply are not, or whether students whose face-to-face classes have been cancelled do not engage with a virtual replacement class.

### 5.2.5. Infrastructure

This construct measured the extent to which students believe the infrastructure in their environment facilitates achievement of the course learning objectives. The Infrastructure aspect had a mean value of 3.33, an overall favourable response, but only just above 'neither agree or disagree' (3.0) on the BLEI Likert scale. This would suggest that respondents found that the infrastructure available to them facilitated the achievement of their course learning objectives to a limited degree. This result – the lowest of all five aspects, and the only one where the standard deviation (0.64) was below the mid-point – might provoke a review into the provision of infrastructure to support blended learning in Saudi universities.

Although the telecommunications infrastructure is improving in Saudi Arabia and Internet services are extended to the more rural areas, lack of dependable technology and infrastructure, as well as inadequate maintenance and technical support, could still negatively affect the availability and accessibility of online learning (Demiray 2010, p.767). Moreover, students in HE perceived the continuing lack of Internet access (for students as opposed to staff) as problematic, along with a generally poor BL infrastructure lacking in technological tools and engagement with these tools by staff. However, the problem of Internet access should be solved fairly soon, given the large proliferation (2 million to 14.4 million in three years - 2010 to 2013) of mobile broadband since 2011 (CITC 2013).

One point was well made by a student, who noted that as Saudi Arabia is such a rich country, 'I wonder why we still suffering from scarcity of electronic devices at the university'. This is especially surprising because, in 2007, the head of ICT at the Saudi General Authority for Investment, Dr Ahmed Yamani, stated that the Kingdom had allocated \$1,507 billion to spend on energy projects, communications and economic cities over the next 10 years, including \$64



billion which would be directed to building IT and establishing the necessary technical infrastructure (Telecom and Digital World Magazine 2007, Para. 6).

Dirk (2010) identified the financing of BL initiatives as being part of the production infrastructure. This case study showed that KSA is already embarking on an expansion programme, building new universities across the country, and is also allocating financial budgetary resources to both this initiative and to the way education is delivered at these HEIs, including into BL. This case has to be considered in light of the fact that KSA is a relatively rich Arab country, expanding its HE provision with constant increase in the number of students while at a time when many developed Western nations are experiencing decrease in total student enrolments due to the effects of the current global economic crisis.

The case data provided in a review of the adoption of BL in a range of nations also noted that KSA HEIs have limited capacity to grow in a nation that is also introducing new institutions across the country (see Tables 2.1. and 2.2). Therefore, by improving the BL infrastructure in KSA, the nation may better meet these capacity issues, as outlined by Demiray (2010). However, the application of BL system promises great results; in their study, Bekkers *et al.* (2010) investigated the application of BL methods within the healthcare sector to improve the doctor-patient rapport and to influence a change in antibiotic prescription behaviour amongst general practitioners (GPs). The results indicated that the majority of the participants expressed increased awareness of antibiotic resistance and greater self-confidence in regulating the antibiotics prescription. The study also reflected the satisfaction reported by the GPs in achieving increased insight into patient expectations and thereby improving the GP-patient rapport.

According to White and Sykes (2012), a number of students used comments to interact amongst themselves in a virtual environment, but when they interacted with the tutor within the same environment, they did not receive a response. This occurred because the tutor did not exhibit complete presence. This problem

was also observed in the current study. Possible solutions to this problem might be monitoring tutors' online presence, setting a minimum weekly attendance period for the tutor on the blended course system, developing a notification system linked to tutors' cell phones or creating an email notification system to inform tutors about student participation in the forum. Indeed, this bears out Pereira *et al.*'s (2007) findings that students do not necessarily consider teaching to be improved in a BL environment, even though they may be more satisfied with course materials, to mention one example. Moreover, as Dalsgaard and Godsk (2007) found, some students remain uncomfortable using some of the online learning materials.

### 5.3. SUMMARY OF ANALYSIS OF STAFF AND EDUCATION EXPERTS' RESPONSES

#### 5.3.1. Four aspects of the quantitative Results

##### 5.3.1.1 The blended learning environment

The aspects covered in the survey assessed the impact of a BL approach on education and learning outcomes, as well as the extent to which Saudi universities are establishing the necessary elements for perfectly blended learning. The positive perception of BL environments was not just evident amongst students. Of the staff respondents, 86.99% either strongly agreed or agreed that using the Internet during a lecture offered an improvement, and an overwhelming 94.31% of staff either strongly agreed or agreed that the use of learning technologies, along with traditional methods, has a positive impact on the learning and teaching process.

The mean value for the first aspect was 3.95, representing almost full agreement from HE staff and experts that a BL approach has a positive impact on education and learning outcomes, although with a mean value of 1.88, there is an indication that necessary elements for establishing a perfect BL environment in HE is only just above 'available', which means that respondents believe that the necessary elements are available to establish a perfectly blended learning environment in HE.

### **5.3.1.2. LMS and LCMS effect's**

Here, the effect of LMS and LCMS on participation in education and on learning outcomes was assessed. Analysis of the findings suggests that participants could obtain feedback from the students and were satisfied with the use of the LMS with students outside the classroom. Moreover, they reported that the LMS/LCMS has a good impact on the BL environment.

Cooner (2010) stated that the assessment marks for the BL module did not reflect the work the students undertook because it was weighted by only 20% at the time. He suggested a fairer balance to provide at least a 50% weighting. If we are to use technology-enhanced learning, then the assessment methods must also be adapted to take on board these changes. Where external professional bodies are involved in accrediting programmes, it is necessary to dedicate time to changing module assessments, as this can be a complicated process.

Dziuban and Moskal (2011) found that in BL, students pay much more attention to the overall educational experience and less attention to the individual aspects of a course identified in the rating questions. One explanation for this, which the author supports, might be that they contextualise the individual items for the online and blended environments and do not use their face-to-face experiences as a standard for comparison.

### **5.3.1.3. Infrastructure**

Infrastructure measured the extent to which the HE environment facilitates achievement of the course learning objectives on and off campus. The mean value of 3.08 represents an overall favourable response; this would suggest that respondents found that the infrastructure available to them facilitated the achievement of their course learning objectives to a limited degree.

In their study, Pereira *et al.* (2007) evaluated the impact of BL techniques in teaching human anatomy, and particularly investigated student performance and satisfaction. The authors present the challenges of implementing BL, especially for the teaching staff. There is a need to balance the use of technology without compromising learning outcomes, student motivation and student expectation. The authors further emphasised that the nature of the course content on the BL platform should be dynamic to adapt to the various learning styles, facilitate student interaction and remain open to incorporating student assessment methods as the course evolves. The course designers for BL are expected to anticipate the problems that may arise during the course and sufficiently emphasise the subject's key points. The work also indicates that one of the critical requirements of BL materials is enabling students to realise self-assessment exercises and activities, while allowing the teaching staff to follow up students' individual and collective progress as the course evolves.

Apart from the challenges to the teaching staff, an institution-wide IT infrastructure is equally essential. In the recent years, free and open source software and shared ICT infrastructure across multiple universities such as grid computing is being investigated in the context of BL.

Through his work, Hughes (2007) identified the active role played by skilled and proactive tutors in encouraging potentially 'at-risk' learners to improve their performance, increase their coursework engagement and therefore improve module retention, without increasing overall teaching time. However, this can be achieved through a combination of well-designed BL materials and proactive help and encouragement on the part of the tutors. One important observation made by Hughes in his study is the importance of facilitating peer support and motivation through designing cooperative online learning without being intrusive. Hughes further pointed out that such an approach could potentially be risky without appropriate training under experienced staff.

#### **5.3.1.4. Obstacles to the adoption of Blended Learning**

This section addresses the most significant obstacles to greater adoption of blended learning in Saudi universities. This factor had a mean value of 3.39, an overall favourable response, but only just above 'neither agree or disagree' on the 5-point Likert scale. This would suggest that respondents perceived problems related to implementing effective BL related to the technological equipment, reliability of communications, electronic content, software and applications and training.

Almegren (2011) mentions satisfactory Internet resources in the HE institutions in KSA but face challenges of human resources and support in e-learning pedagogy and content production. AlKhalifa (2011) too mentions a lack of understanding of requirements of e-learning as well as a lack of training in pedagogy and managing e-learning environments. The NCeL is expected to assist in content development, but they seem to only facilitate it by providing resources. The pedagogical support is still not available in any organised manner. Surprisingly, neither of these papers nor others from the KSA on the topic of BL, BL uptake and BL experiences, mention the use of OER, the efforts to introduce MOOC in KSA or the facilities provided by the NCeL which include Digital content services which assists in producing courseware and MASAR which is a authoring tool for courseware. What is unclear is whether there are any sources for pedagogy in e-learning. These are some obstacles to broader adoption.

Cooner (2010) stated that at present, the tutor alone designs, creates and teaches BL modules. However, this does not apply to the KSA context or in the context of UK. In UK, the HEA has specific efforts that address various aspects of content development such as the Digital Literacies in disciplines (DLD), MOOCs and OERs.

In general, assigning the ownership of an entire course to a single tutor is not a recommended practise. Providing a good quality interactive course and a

support system for the course students does create pressure for a lone tutor; one way of improving the design could be to create a small team of practitioners and service users who could assist in responding online. On the other hand, possessing the technical knowledge and pedagogical content knowledge enables the tutor to adapt the appropriate tools and approaches the students require in their learning. This flexibility may be hindered if a team becomes responsible for the different elements and delivery of the teaching design. However, standards and guidelines will evolve as will a standardised set of tools and processes for creating courseware.

The college administration faces resistance from lecturers in teaching blended courses. It is noteworthy that lecturers are usually not involved in the decision to introduce and implement BL. Here, some lecturers expressed some awareness of blended teaching. They asserted the need for support and training for their extra work and time. In order to encourage lecturers to accept the transformation to blended courses, the administration gave extra payment for each blended course taught. However, some lecturers had concerns about the structure of such payment (Sinclair 2011). Singh and Reed (2001) recommended a change in management strategies to overcome such resistance to change.

Another obstacle to the use of technology and Internet for learning is the influence of Saudi culture on the use of Internet. Al-Dugairy (2009) emphasised that Saudi culture has an impact on the strategies of implementing BL. As discussed earlier, some families are against providing Internet access at home. Supporting this view, Al-Dugairy (2009) reported that a public use of the Internet had negative effects on study performance and family relationships of 61.32% of the students of PNU in Riyadh.

However, there are other views regarding the adoption of various Internet technologies. Al-Wehabi et al, 2008, in a study on faculty member's access to the Internet found no significant differences associated with faculty members' gender, academic discipline, teaching experience, and age. Weerakkody 2008, in his study on the low penetration of broadband concludes that a major factor in

the reluctance to adopt broadband is due to the filtering and monitoring of Internet traffic. Al-Gaith 2010, in his study on online and Internet usage concludes that women are more likely to subscribe and use the Internet and Internet based services. There seem to be no specific reference that mentions either a lack of Internet access to females or a social negative impact on the Saudi society. Simsim 2011, in his survey on Internet usage and usage preferences in KSA demonstrates that neither of cost or permitting the use of Internet in the family is an issue. Less than 1 % of women report that their husbands do not permit them to use the Internet. While 58.1% of the housewives do use the Internet, the rest do not because they are not computer literate.

In terms of access statistics, GlobalWebIndex, for the year 2011, reports 9 Million active Internet users of which 31.9% are females. 92.9% of these users have access from their homes and 43.8% from their work place. Statistics from the International Telecommunications Union (ITU) mention 60.5% of the 29 million populations (17.55 million) are Internet users in 2013. There are 50.8 million cellular telephone subscriptions, 4.7 million fixed telephone subscriptions of which 2.1 million have broadband connections. CITC 2013 mentions 16.4 million Internet users, 4.7 million fixed telephone subscriptions, 3 million fixed broadband connections, 14 million mobile broadband subscribers and 51 million cellular subscribers. With a 22% growth of mobile broadband in a year, it is obvious that a majority of the Internet access is via mobile broadband. The concerns in Al-Dugiary (2008) may not be valid anymore. With such growth rates of Internet access, the HEI in KSA should consider adapting the BL content to be accessible via smartphones.

As the Internet becomes more acceptable as an educational tool, a more positive attitude is expected to develop, enabling a faster adoption of BL methods. In addition, there is a need to find strategies that can be followed to enable female students and lecturers to benefit from this technology while maintaining their cultural values.

### 5.3.2. Staff qualitative responses

Educators were given the opportunity to provide qualitative insights in the free response section of the questionnaire. Their responses showed that many had not used BL at all, or only to a limited extent. Interestingly there did not seem to be much difference between usage levels based on how long a member of staff had worked at a particular institution, but for those who provided free responses, more females than males reported that they had never used BL. Wider adoption of BL may not necessarily act as an attractor for potential staff who are more interested in the financial package on offer, and who may even be put off seeking work at a university that fully embeds a blended approach to learning.

Staffs were also asked about whether or not they agreed with the statement that 'In the future, students' selection of a university will be based on the technologies it provides'. It was found that 68.55% of staff strongly agreed or agreed with that statement. It will be interesting to make one final comparison between these responses and the student responses, where an even higher proportion of students (77.7%) strongly agreed or agreed that in the future, 'Students' selection of a university will be based on the technologies it provides'.

### 5.4. PERSONAL REFLECTION ON DATA ANALYSIS AND METHODOLOGY

The findings of this study hinged entirely on the accuracy and authenticity of data collection and the data analysis. The study used both qualitative and quantitative data analysis. According to Silverman (2001), reliability and validity are two central concepts to assess the credibility of scientific research. However, these two terms, as defined in quantitative research, may not apply to the qualitative research paradigm, where the terms *consistency* and *dependability* are often preferred over reliability and credibility (Ritchie & Lewis 2003). One of the ways of bringing credibility to a qualitative study is through triangulation (Cano 2000; Creswell 1998).



In this study, triangulation of sources was used with the assumption that the use of different sources of information will help both to confirm and improve the credibility and accuracy of research findings.

One of the primary goals of this research was to investigate the perceptions of BL amongst students, staff and experts at various universities within KSA. In addition to quantitative data, qualitative data analysis was identified as the most appropriate approach for analysing participants' perceptions. The qualitative data were analysed to derive the interpretation of the participants' perception of blended learning. The data were collected starting in late 2011 and analysis of data early on in the research influenced future data collection, adding further credibility to the research. Based on the general guidelines for data analysis, this study followed a systematic and reflective approach. Data analysis requires organising and interpreting data. The approach adopted in this work was to categorise the data collected under themes defined by the five aspects of BLEI, specifically Access, Response, Result, Interaction and Infrastructure.

Based on the objectives defined at the start of the study, the themes were predetermined and data driven. Results that showed the impact of various aspects of BLEI assisted in deriving important issues related to the research questions.

In retrospect, data collected through the survey could have been further validated by using observational means and by means of personal interviews or focus group discussions with the respondents, especially with respect to certain issues that were highlighted in the results, which required further probing and investigation. For instance, where students expressed dissatisfaction with the lack of online interaction by the lecturers, leading to poor perception of BL, the data could be further validated by observational means or through personal interviews with students.

## 5.5. ETHICAL ASPECTS OF RESEARCH

Ethical issues concerning the rights of the research participants were upheld as part of data collection in this research, as suggested by Verma and Mallick (1999). This was particularly important, as the data collected consisted of personal information/opinions of the students, staff and other experts.

Ethical responsibility was met in the entire research process from the design of the survey to conducting the survey and in the interaction with the respondents. Procedures were put in place to ensure the required ethical rules were met and respondent rights were guaranteed.

First, the director of studies approved a certificate of ethical consideration for this research, confirming the measures taken in this research. Based on the Ethical Guidelines on Research of the British Educational Research Association (BERA 2004), appropriate permissions were obtained from the participating universities in KSA. The survey was distributed among participants by clearly stating the objectives of the research and its consequences and for them to share honest opinions that could help increase the credibility of the study. NCEL was approached to conduct the survey on behalf of the researcher by indicating that the research results would be used in the development of BL implementation in Saudi universities. The participants were clearly informed that participation was not compulsory and that they had the right to withdraw from the survey at any time. Moreover, although respondents could optionally provide their names and contact details, they were also able to respond anonymously if they desired.

## 5.6. CONCLUSION

From the results reported in this thesis, the author thinks that the implementation of constructivist learning theory needs to invite students to interact with the lessons, allowing them to build their comprehension ability. Furthermore, applying cognitive learning theory – which requires students to be active in the learning process – will lead to further understanding. BL gives

students the opportunity to review their prior understanding and build new comprehension, which arises from solving problems. The qualitative responses from staff in the current study suggest a need to combine educational theory with technology in a BL environment.

## CHAPTER 6: CONCLUSION

### 6.1. INTRODUCTION

Information technology and the Internet have become major influencing factors in teaching and learning practices within the HE environment. Research has indicated that many universities are reviewing their existing teaching strategies to include technology-based online and offline learning techniques along with traditional methods, which is popularly termed blended learning. Given that, 'blended learning' indicates a paradigm shift in learning style and in education at large, it has become essential to conduct research into social and psychological aspects of BL. Moreover, it will be an interesting observation to see how they affect the students and staff's perceptions of BL.

There have been several studies and findings published on the effectiveness of BL, the relationship between BL and student performance, collaborative learning and so on. However, most of the studies are based on universities in the Western world, and very few studies exist that focus on universities within the Arab region. There is a vast difference in cultural contexts between the Western and Arab regions, which has a profound impact on the HE sector, particularly on the effectiveness and acceptance of BL and other technology-based learning methods. This research has aimed to address this gap by studying the effectiveness of BL, taking into account the cultural context of the Arab world.

The aim of this thesis was to assess and identify the current status of BL within universities in the Middle East, specifically the Kingdom of Saudi Arabia. Consequently, the challenges encountered due to the cultural, social and economic context of KSA while implementing BL were investigated.

The methodology adopted to achieve the research aims and objectives was a descriptive case study-based approach to evaluating the BL methods in HEIs in Saudi Arabia. The perceptions and experiences of HE students, staff and experts

concerning their learning environment were discovered through qualitative and quantitative methods.

As part of the research, a new instrument of evaluation, namely the blended learning environment instrument (BLEI) was developed to gather quantitative data. Two surveys were designed to analyse student and staff perceptions and thereby derive information on their satisfaction with the BL environment. Qualitative data from the same users were derived by open-ended questions added to the BLEI and staff surveys. The survey samples were collected from various universities from across KSA with varying cultural, social and economic demographics. The student survey results were analysed to validate the reliability of BLEI.

Overall, this research aimed to study the holistic learning environment at universities in KSA; it did not focus merely on technology-enhanced learning or on traditional learning methods, but also looked at the currently available hybrid-learning environment. The study therefore investigated the preliminary user experiences in BL environments, the benefits and challenges of this form of curriculum delivery, the communications and interactions between students and instructors. The study focused on the separate teaching and learning experiences of male and female students. Last but not the least, the survey sample also included staff and other BL experts to obtain a holistic view of the current status.

The current study indicates that the technology-enhanced learning concept is still in its early stages in KSA, and most of the universities are still largely physically based on campus experiences. However, technological advancement is taking place at an increasing pace, and hence this study has added relevance.

This chapter summarises the research findings of this study as well as recommendations for HEIs based on them. The thesis concludes by presenting future directions for research.

**Chapter 1** introduced the concept of BL in the HE environment within Saudi Arabia, providing the background of the study. The motivation for the research undertaken was presented by highlighting the rapid development of ICT in Saudi and its influence on all walks of life, particularly in the education sector, resulting in huge budget allocations. A gap in the existing research on BL is identified, indicating that, while a lot of research work has been published in the area of BL within the Western world, there is a lack of similar work within Arab regions. Having identified this gap, the research aims and objectives were defined and the significance of the study was presented. Chapter 1 also presented the overview of the thesis.

**Chapter 2** outlined a variety of studies related to 'blended learning' such as definitions, its current status and trends. It presented a critical review on the effectiveness of BL, existing deployments and emerging trends. Chapter 2 also provided an overview of the ICT infrastructure of BL, specifically the concept of e-infrastructure being deployed around the world and in Saudi Arabia.

**Chapter 3** presented the research methodology by defining the research questions for the study. Data collection methods were discussed and the use of triangulation was justified to increase the credibility and consistency of the data collected. In addition, Chapter 3 presented the design, development and validation of the blended learning environment instrument (BLEI), a new instrument which was developed to gather and analyse quantitative data for this study, while highlighting similar instruments such as WebLEI. Chapter 3 discussed the aspect of Infrastructure, which was newly introduced in BLEI, in detail. Further, statistical analysis of the collected data was presented along with the calculation of Cronbach's alpha for each aspect of the 80-item BLEI instrument.

**Chapter 4** presented the findings of the quantitative results based on the BLEI questionnaire and staff survey and qualitative results highlighting student, staff and expert experiences. Differences in learning environment responses were examined, taking into account demographic information such as student gender,

level of study and subject area. Qualitative responses from staff and experts relating to the engagement with BL were also examined. Demographic information such as gender and years of experience was also considered for the staff and experts.

**Chapter 5** critically analysed the findings by considering each aspect of the student and staff surveys, specifically Access, Interaction, Response, Results and Infrastructure. These were then compared to the results presented in the existing literature review and related works. Leading from a summary of the above analysis, the possible obstacles for the large-scale adoption of BL were highlighted.

## 6.2. MAIN FINDINGS OF THE THESIS

A number of research questions were proposed in this research, and the two surveys were carefully designed using the new BLEI instrument to derive answers for the proposed research questions. The survey analysis provided answers and insights into each of the proposed research question, which is summarised in the paragraphs below.

### **6.2.1. Research Question 1: Based on the perspectives of students, staff and HEI experts, what is the impact of LMSs on the learning environment within universities in Saudi Arabia?**

Since LMSs such as Moodle, WebCT, Blackboard, ATutor and so on form an integral part of the BL environment within universities, it is critical to understand the impact of LMSs on the courses offered at the university in terms of ease of use, effectiveness in learning and student performance. The first research question was drafted to derive the answers for it.

The results indicated that up to 75% of students, staff and experts surveyed convey that the LMS influences learning experience in a positive manner. Moreover, BL offers a convenient and competent method of accessing learning

materials and learning activities, particularly in meeting learning goals, enabling asynchronous communication and facilitating interaction. Approximately 75–80% of the respondents said that the availability of BL resources in the university would influence them in choosing to study at the university or take a particular course. A similarly large percentage of respondents convey that the amount of learning and the satisfaction of learning are far higher on BL platforms. However, on a slightly lower scale, that is, between 60–70% of the respondents were satisfied with the ease of access, availability and accessibility of learning materials in blended learning LMSs. While the quantitative results gathered from students, staff and experts did confirm that their perceptions about BL are positive, a number of qualitative comments – particularly from the students – indicate dissatisfaction in their BL experience due to poor accessibility and availability of resources, poor response from the lecturers and insufficient infrastructure to support an effective BL environment.

The staff responses from the survey indicated that a high percentage of them tend to believe that the students are not ready for technology-enhanced BL environment. Their perception stemmed from the fact that students have not been able fully utilise the BL resources to improve their learning outcomes or learning experience. In addition, student interaction and collaborative learning using the BL platform has been minimal.

This study was inclusive, taking account of a differentiated and disadvantaged population sector to illustrate the extrapolation of the BL approach to address education delivery to isolated community sectors. Increasing availability of learning content on LMSs enable the students to participate in learning activities from a distance, without having to attend campus-based learning activities. The discussions with students showed that the flexibility inherent in BL can enable access to the learning environment for many part-time students and students working full-time or with full-time family responsibilities. This is particularly useful in allowing mature students with other work-related commitments, women with children and even disabled students to make the most of the learning resources. Students may be disabled, in remote locations, or merely lack



the time for university attendance due to work or family commitments. The BL approach could also be appropriate for life-long learning, following Garrison and Vaughan's (2008) claims.

One comment from a female student reiterated the need for a BL environment, especially for mothers: 'The virtual classrooms can solve the problems of mothers because they could attend their lecture while they are at home with their children at the same time'. This is consistent with a lecturer's comment to the effect that 'I teach female student via university internal podcast', which, as noted by the students, also points to the suitability of BL to serve the needs of female students at a distance. Therefore, flexibility appears to be one of the main reasons for the satisfaction with BL amongst many students.

### **Demographic analysis of results related to Research Question 1**

About 80% of the male respondents seemed to agree that the LMS and BL improved their perceptions of the university learning environment, while less than 60% of female respondents reflected this view. A larger percentage of postgraduate students (master's or PhD), at about 60%, appeared to be less satisfied with current levels of BL responsiveness at universities, implying that postgraduate students had higher demands in relation to BL resources that need to be addressed. Similarly, the issues that are hindering female students from tapping the potential of BL also need to be remedied.

The survey results highlighted a very critical issue, specifically the lack of skilled human resources when it comes to tapping the potential offered by technology for teaching and learning. A large percentage of educators, approximately 50% of the staff respondents, had not used BL at all or only to a limited extent. More females reported that they had never used BL before than males, further highlighting the need to address issues that hinder female students and staff from participating in BL.

### **6.2.2. Research Question 2: How effective is the current blended learning environment in the HEIs in facilitating collaborative learning?**

Blended learning in this study involved the use of individual instructor websites that were developed to supplement face-to-face instruction. However, such implementation was not found to affect the students' and instructors' classroom attendance. The results confirmed that students must be responsible in their learning activities, as well as that other students and lecturers must also be responsible in participating and providing sensible and timely feedback. Students realised that they are expected to be self-disciplined when engaging in a BL environment, and that they are expected to participate and interact regularly in order to make the most of this environment.

Although LMSs have a great deal of functionality, the qualitative responses indicated that staff continues to use more traditional features such as e-mail to communicate with students and receive assignments. The onus of making LMS effective and useful lies on the lecturer, who can explore all the possibilities of technology in delivering the curriculum and in engaging with the students. It also relies heavily on the university's 'interest in applying educational technology'. While staff participants confirmed that they can gather feedback from the students and are satisfied when it comes to using the LMS with students outside the classroom, there is a clear indication of lack of training for both staff and students in using the Internet and LMS technologies effectively.

#### **Demographic analysis of results related to Research Question 2**

Male and female students showed very similar mean scores related to the impact of the BL environment on collaborative learning and interaction. However, differences by level of education were found, where a larger percentage of postgraduate students agreed that BL facilitates collaborative learning and improves the learning environments than undergraduate students did. A larger percentage of male participants agreed that the online component of blended curriculum delivery offered learning flexibility, enhanced the quality of lecture

times and allowed greater interactions during lectures. This could be attributed to the Saudi Arabian culture, where men have greater access to technology and tend to spend more time using it than their female counterparts.

### **6.2.3. Research Question 3: Do the students, staff and experts experience a positive feeling, a sense of achievement and satisfaction with their BL environment?**

Both the qualitative and quantitative results reflected that students do experience a sense of achievement in the hybrid learning environment. Similarly, the staff and experts appreciate BL. As presented above, there was almost a unanimous agreement amongst the respondents that BL methods have a direct impact on the learning outcomes, thereby giving students and staff a great sense of achievement. A large number of student respondents further confirmed that they could learn more and their interest was maintained throughout the course, particularly when the lectures tapped the full potential of the LMS to deliver the learning content and to engage the students. Despite such positive response from students, staff and experts regarding the usefulness of BL, it is clear from the results that technology-enhanced hybrid learning methods are not consistently applied across HEIs throughout KSA.

From the qualitative analysis, it may be noted that some students appeared to be less satisfied with current levels of BL. The main reason for this was that the traditional learning methods are not well integrated with the technology-based learning approach, as mentioned by one of the respondents, such that BL does not meet students' expectations.

While it is clear that the vast majority of the students and staff welcomed the introduction of BL technologies, the qualitative responses indicated that the respondents believe it is suited for certain subjects and not for others. Students also identified the need for KSA HEIs to better support the adoption of technology-based BL methods. Other notable staff comments about BL suggested that 'BL is not always positive: When not used seriously, it can potentially have a

negative impact'; moreover, 'Surfing on the Internet in the lecture takes time and it is not suitable for all courses'. This indicates that the effectiveness of BL differs for different courses. The study did not particularly focus on the course-wise impact of BL; nevertheless, this is an important feature that should be investigated in future studies.

### **Demographic analysis of results related to Research Question 3**

Male and female students showed very similar mean scores regarding the sense of achievement and satisfaction with the BL environment. However, differences by level of education were found where postgraduate students were more likely to agree about the positive feeling they had and the sense of achievement in BL environments than undergraduate students.

#### **6.2.4. Research Question 4: Does the implementation of technology-based teaching and learning methods harm the learning environment goals and objectives in any way?**

From the quantitative results of the student participants, there was marginal agreement among the students that the organisation of the course content and learning objectives are effectively presented in the BL environment. Further, the learning content and activities are more structured and planned in a logical approach on the BL platform than in the traditional learning methods. This enables the students to focus and engage in learning more effectively. However, many of the qualitative responses indicated that students perceived that KSA universities are 'not ready' for BL due to a 'lack of digital contents, lack of equipment and lack of awareness. This further aggravated by the lack of interest' in the current system, where staff continue to rely upon more traditional classroom technologies such as PowerPoint presentations, as well as an environment that is not deemed to be 'conducive to apply blended learning'. This result supports the view that there policies are needed in universities to provide positive, appropriate material in terms of content, structure, and interactivity in the BL environment, at least to some degree.

### **6.2.5. Research Question 5: Do the students, staff and experts perceive blended learning infrastructure as an enabler to achieve the learning objectives?**

Student respondents found that the infrastructure available to them facilitated the achievement of their course learning objectives to a limited degree. Students perceived the lack of Internet access (for students as opposed to staff) as problematic, along with a generally poor blended learning infrastructure lacking in technology-based tools. The poor engagement with the existing tools and technologies by the staff only added to the problem. One student appropriately questioned the reason for the lack of electronic devices in KSA universities despite its economic superiority to many countries. The majority of comments related to the BLEI aspect of Infrastructure and echoed some of the findings of Almalki's (2011) research. These remarks also showed the importance of considering Infrastructure as the sum of production and coordination (Steffens & Reiss 2010).

Male students had a greater tendency to agree that infrastructure in their environment facilitated achievement of the learning objectives of the course. In an attempt to identify the current status of BL infrastructure and the perceptions of the staff and experts, a list of elements that enabled the established of a perfect BL environment was designed. The HEI staff and experts were given the list and asked to identify the appropriate option for each item that they believed currently existed in the university. The five critical elements defined were the human element (skills related to the teacher and student); technical element (infrastructure of e-learning); administrative element (setting goals, policies and strategies); social element (the culture of the educational community); and economic element (budget and financial incentives).

The results relating to this question indicated that the necessary elements for establishing a perfect BL environment in HE are available in a limited way, and these elements can be arranged by descending order of importance as follows:

the human element, technical element, economic element, administrative element and social element.

#### **6.2.6. Research Question 6: What support for BL is currently available in KSA?**

The survey results indicated higher satisfaction among students and staff with the BL environment compared to solely traditional methods. Two patterns clearly emerged from the results; one favoured the classical traditional teaching methods and the other favoured the BL approach. However, regardless of their current learning environment, a larger percentage of respondents tended to agree on the general benefits of technology-enhanced learning at universities.

The results clearly showed that Saudi universities are still in the early stages of BL; there are still multiple gradients of applying technology to traditional learning methods. The majority of traditional on-campus courses are complemented with an LMS, where the staff engages with the LMS at varying levels. There is an indication of natural organic growth in the BL environment that is beneficial from the student and staff perspectives. However, this may seem slow to the administrators and policymakers, who are keen to move towards the BL environment at a rapid pace.

### **6.3. IMPLICATIONS OF THIS STUDY**

#### **6.3.1. Contribution to the literature**

Blended learning has been of academic and research interest in the past few years, where study has been conducted on various aspects of BL within the HEIs. Most studies have examined BL designs in HE around the globe, particularly the Western world. There has been a lack of such studies within the Arab region, as BL is in its early stages in the Saudi university environment. However, technological penetration into the Arab regions is currently increasing and

concepts of BL are being deployed, while the Western world has exploited BL for many years now.

The cultural, social and economic contexts in the Arab region differ from those of the Western world and have a large impact on learning practices, particularly BL. Thus, this thesis aimed to fill this important gap in knowledge by addressing how the Arab cultural context and student demography affect the successful deployment of BL in HEIs. The study also aimed to address the effectiveness of blended learning in the Arab regions, particularly in Saudi Arabia, based on the perceptions of students, staff and HEI experts.

The research conducted was inclusive and spanned all regions of Saudi Arabia, which exhibit varying economic and social disadvantages. This study was holistic, as it was based on the perspectives of both students and faculty members across the universities in the KSA. The sample included students from all-female and all-male universities, and among the staff it included all-male instructors with male and female students, where female students had no physical interactions with their instructors. This is the first study to have investigated the effectiveness of BL delivery in a gender-segregated learning environment. Hence, the study adds to the literature on BL by identifying some critical research issues arising due to the socioeconomic and cultural differences in the Arab world in comparison to the Western world.

As BL is in its early stage in the Saudi university environment, this study contributes to the research through identifying issues that can enhance and positively influence BL as a means of delivering curriculum in HEIs in KSA. The study emphasised cultural, social and economic challenges such as gender segregation, lack of infrastructure in remote locations and the larger percentage of mothers registering for university programmes within Saudi HE environment. As a result, the findings of this study are expected to have a high impact on policymakers, educators and other peer research scholars. They are expected to contribute to the framework, principles and guidelines for effective implementation of BL in HE, especially in Saudi universities.

### 6.3.2. Contribution to theory

This research adds to the growing number of studies by investigating the BL experience in the context of HE, and in particular, in verifying the validity and reliability of BLEI. Researchers have proposed many such instruments to analyse data and present findings in a meaningful manner. The blended learning environment instrument (BLEI), a new instrument that was developed as part of this research, contributes to the theory by introducing BL infrastructure as a critical parameter in evaluating BL environments.

The study further contributes to knowledge theoretically by assessing the literature findings explaining the impact of BL design on the quality of teaching and learning. In particular, the study illustrates how BL design can enhance interactions in the learning environment. The above contributions to literature and theory development can also be evidenced in the following publications, which have already arisen out of the work undertaken for this thesis:

- Aljahni, A., Obayya, S. and Skinner, H. (2010) 'Encouraging effective blended learning in higher education in the Kingdom of Saudi Arabia', paper presented at the 5th International Blended Learning Conference, 'Developing Blended Learning Communities', University of Hertfordshire, 16-17 June.
- Aljahni, A., Al-Begain, K. and Skinner, H. (2011) 'ICT Infrastructure of blended learning in higher education', in *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2011*, pp. 524-533. Chesapeake, VA: AACE.
- Aljahni, A., Al-Begain, K. and Skinner, H. (forthcoming) 'Development and validation of the blended learning environment instrument (BLEI) in higher education'. *Journal of Interactive Learning Research (JILR)*.



### **6.3.3. Contribution to practice**

This research presented a case study examining the adoption of BL in KSA in order to explore how it can transform HE effectively in the context of the Arab world. The conclusions and recommendations stemming from this study that can lead to improvements in the learning experience and mapping out valuable inputs and pathways to success for everyone committed to BL, including HE administrative leaders, faculty members, instructional designers and researchers.

The results and outcomes of this research provided data regarding the perceptions and implications of BL in universities across KSA. This is expected to contribute to the development of an action plan for BL in Saudi Arabia. The study concludes with recommendations as to how blended learning can be implemented to enhance teaching and learning in Saudi HE. The research findings have potential value for everyone committed to BL, including HE administrative leaders, policymakers, faculty members, instructional designers and researchers.

The study provides an evaluation of benefits, influences, challenges and future professional development needs, particularly with regards to infrastructure for BL in HE particularly in Saudi Arabia. It gives insight into the perceptions on motivation and engagement of students and instructors to create effective BL environments that enhance their interactions, teaching and learning. It further aims to contribute to the evolution of pedagogy in Saudi universities in terms of the student's ability to construct knowledge.

### **6.4. Personal Reflection**

The Kingdom of Saudi Arabia is one of the very few countries with a budget as huge as 200 SR billion allocated to education sector (Saudi Gazette 2013). The deployment of ICT infrastructure is rapidly increasing and the impact is bound to

be felt in various aspects of Saudi society, particularly education. A concept of BL where learning is enhanced by technology has been gaining prominence in the past few years. In order to substantiate the allocated budget as well as to exploit the rapid growth in technology, there arose a need for research-based study on BL within the Arab cultural, social and economic context. Such research aims to aid in drafting long-term BL strategies and policies, as well as in standardisation within KSA.

The literature review indicated existence of numerous studies on BL within the Western world's context, and very few works on the Arab region. Bridging this gap in knowledge was the motivation for this study, which aimed to weigh the impact of Arab cultural, social and economic issues on the large-scale acceptance and implementation of BL. The focus was on the perceptions of BL in a gender-segregated university environment, which is unique to the Arab region. The lack of infrastructure in remote regions of Saudi Arabia and the attitudes towards acceptance of new technologies within the traditional domain of teaching and learning are aspects associated with Asian and Middle Eastern regions. The study aimed to investigate the above factors; following the methodologies adopted for similar studies on evaluating BL, a descriptive case study-based approach was chosen.

This study will be particularly useful for educators within KSA who need valuable inputs concerning how the perceptions and impact of BL are different amongst male and female students in gender-segregated universities. The attitudes of staff and experts towards the growth of BL, as well as the usefulness of the BL methods for students in economically disadvantaged regions, part-time workers and mothers who are pursuing HE within Saudi Arabia, have been well represented. However, there are some limitations to this study as outlined below.

The findings of this study are based on surveys that were distributed between late 2011 and early 2012 to students enrolled in full-time blended learning courses, as well as staff and experts at KSA universities. Adoption of ICT

technologies within the education sector in KSA has only begun to increase recently yet has been much slower than in its Western counterparts. Thus, it can be expected that in the short term, Saudi universities' resources shall improve, their competencies will grow and their attitudes will change.

This study's limitations are embodied in the pace of ICT change. Hence, some results of the study may only have immediate significance and may not hold true in the long run. For instance, students complaining of slow access to resources may not do so in the near future when high-speed Internet connectivity becomes available. Thus, inferences made about these current comments may not hold true in the future due to the rapid pace of technological advancement. Wireless and mobile technologies are still something of a novelty among many remote regions in Saudi. Consequently, the selection of participants may or may not reflect the body of opinion across the KSA, especially in some disadvantaged regions.

The data generated by this study are limited by the number of participants, that is, 269 students and 211 staff and experts from only a section of universities in KSA. The results of the qualitative analysis indicate that a vast majority of the students do perceive the usefulness or the impact of BL to vary based on the nature of the subject and course. In retrospect, the work could have probed this issue further by conducting a subject-wise or course-wise analysis. Similarly, aspects of demography and its correlation to perceptions of the BL experience could have been probed further.

Given that the research proposal was submitted in 2010, serious attempts were made to keep the literature review as up-to-date as possible and to keep the survey as relevant and recent as could be accomplished.

## 6.5. RECOMMENDATIONS

Quinton (2006) advised that there is 'no single, correct medium for delivering eLearning, nor is there a set of formulaic specifications that dictates the kind of interaction most conducive to learning in all domains for all learners' (p.557). The Kingdom of Saudi Arabia is aware that the society is based on educated and skilled people, and therefore education is at the forefront of priorities of the Saudi government. Empirical evidence, including that presented in this study, points to BL curriculum delivery as an efficient and successful means to a quality education to improve student numbers and student engagement. Issues with access to learning resources anytime anywhere for full-time students, part-timers, mothers, disabled individuals and students from remote, disadvantaged locations may be resolved using the efficient deployment of BL.

Through the results of the study, a number of recommendations can be put forward to enhance the integration of technology in traditional learning in the HE environment. The most important of these are as follows:

- There is a need for a framework and standardisation with regards to implementation of BL for curriculum delivery across universities in KSA. This framework must be a collaborative effort of Saudi university academics, the Ministry of Higher Education and other policymakers. This would enable measurement and monitoring of university expenditure and outcomes to gauge where future resources and training are to be deployed. In order to aid such a framework design, it is critical to assess and evaluate the current status of BL in all Saudi universities. Factors such as gender segregation, female students' access to male instructors, students with disabilities and those living in remote locations should be accounted for while designing the framework.
- The qualitative response from the study clearly highlights that one factor involved in hindering students' engagement, the slow rate of adoption of BL activities and the general lack of effectiveness of BL is the staff

members' lack of skill in this area. They are not able to tap the full potential of ICT technology in curriculum delivery, despite the large investments in ICT infrastructure by the university and allocation of huge budgets by government, and this represents a major road block. It is essential to divert a large portion of the allocated budgets to promote computer literacy for the population at large, particularly training in the education sector amongst academics and administrators to exploit the considerable resources that the government has committed to ICT in this sector. Faculty members and educators need to be cognisant of their students' interests so that they can relate to their experiences and guide their knowledge.

- A set of comments from a member of staff and students noted that 'traditional learning save time and facilitates more interaction between the lecturer and the students'. Such comments may stem from the non-availability of skilled staff and training. In addition, the results from the BLEI, staff survey and qualitative comments from respondents of both surveys reflect that a favourable blended environment should include training for staff and students to use the technology at an early stage of HE.
- It is clear that many members of staff, especially those with more than 20 years of experience in teaching in a traditional environment, are unable to deal with education technology; one of the most important recommendations would be to establish a comprehensive training programme for students, staff, educators and policymakers.
- Responses from the students, staff and experts in this study suggested that accessibility to learning resources and availability of the resources in the BL environment are critical aspects of making BL and online education effective. This clearly emphasises the need for efficient infrastructure that could make the resources available and accessible and enable the students to join formal and informal learning on campus and online with a focus on the learner in all modes. This would also involve

gradual and strategic rehabilitation of traditional education to form an education that depends on modern technologies (Aljahni 2009).

- The BLEI, a new instrument based on BL infrastructure as a metric developed as part of this study exhibited satisfactory internal consistent reliability and discriminate validity. It can thus be used to assist researchers and developers when evaluating BL in HE with particular focus on infrastructure as a critical factor in making BL effective in Saudi universities. The KSA Ministry of Education would benefit from further research into the issues identified in the BLEI analysis, with a focus on the aspects of Interaction and Results for undergraduates and Access for postgraduates.
- The greatest concern is Infrastructure, which was identified as a significant barrier to providing effective BL in Saudi Arabia in both the survey responses and student comments.
- The BLEI results reflect that HE students are familiar with BlackBoard features more than JUSUR. This calls for the recommendation to use a widely accepted LMS and framework rather than developing a new one.
- There is a need for a specialised team of HE decision-makers, such as from the Ministry of Higher Education and the National Centre for E-Learning and Distance Learning, to assess BL at all Saudi Arabian universities from all perspectives (Infrastructure, Access, Interaction, Response and Result) to gain knowledge about the degree to which educational goals are achieved in a BL environment and to ensure the stability of the learning environment.

## 6.6. FUTURE PROSPECTS FOR THIS RESEARCH

The research and findings from this study lead to several areas, which should be the focus of further research. Future study should explore details regarding BL for university leaders and policymakers to keep pace with the growing

technological advancement and how it may be used in implementing a sustainable BL environment. Particularly, research focussing on the relationship between traditional and virtual delivery of learning resources is essential to help design effective BL strategies and methodologies.

The literature review in Chapter 2 of this study considered KKU as an advanced university in the application of e-learning. However, a KKU staff member noted that ‘There is resistance from staff and students to accept blended learning, while the university provides and enhances all education technology’. This only reiterates that there is a need for further probing in this research area to identify negative impacts on staff and students. Further research could focus on effective training methods for staff, students and other players in BL in order to tap the full potential of the technology, as well as to justify the increasing budget allocations by the government for the HE sector.

During data collection period, it was found that lecturers and students from various universities in KSA used outdated technology provided by the university to implement blended curriculum delivery. It would be interesting to assess the role and potential for mobiles, handheld devices and other emerging technologies to improve instructional practices in the BL environment.

The research did not focus on the impact of BL on individual courses, but rather looked at various factors enabling BL in general. Previous research has shown that BL methods need to be individually designed and cater to different courses based on individual needs in order to be effective. It may be useful to conduct a similar study to this one that takes into account individual courses as a variable.

The current study revealed that most universities in Saudi Arabia are still poorly equipped, with very little ICT infrastructure. Future research should investigate the huge budget – amounting to \$64 billion – directed towards building ICT and other necessary technical infrastructure within HEIs.

Universities and the Ministry of Higher Education in the Kingdom of Saudi Arabia would benefit from further research into the issues identified in this analysis, including accessibility, availability and interaction. The greatest concern is the aspect of Infrastructure, which remains a significant barrier to providing effective BL in Saudi Arabia.

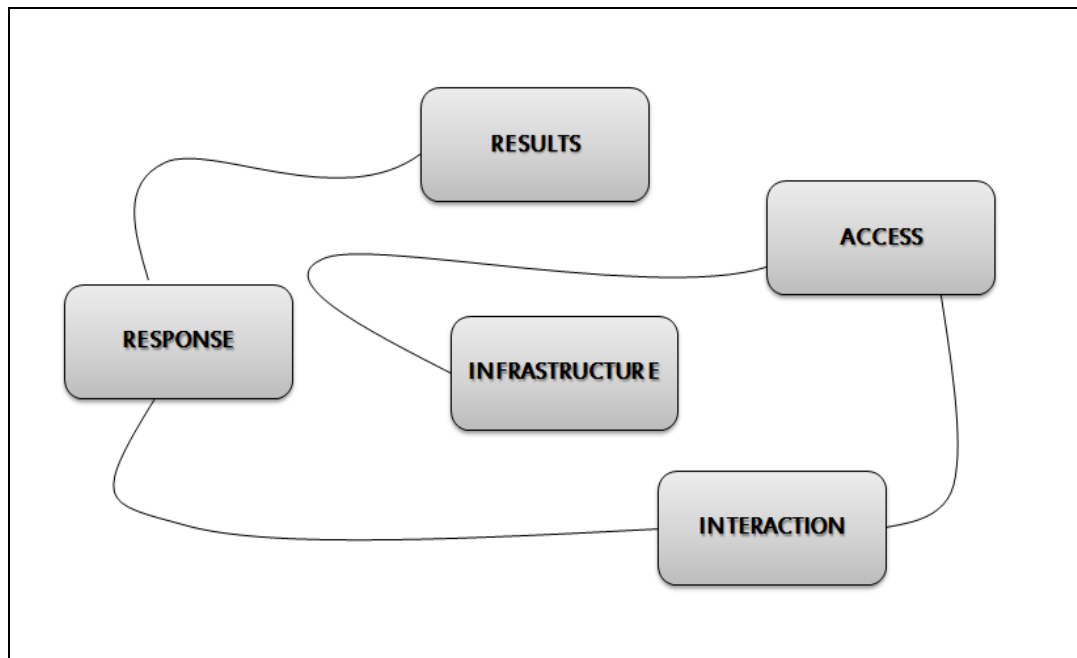
## 6.7. SUMMARY AND CONCLUDING REMARKS

The general aims of this thesis were to assess and identify the current status of blended learning in the Middle East and specifically Saudi universities, and to identify the obstacles and challenges encountered at Saudi universities while implementing BL. The large-scale acceptance and deployment of BL across various universities in Saudi Arabia were investigated given the cultural, social and economic contexts of this country.

The case study-based approach adopted in the study was validated by the introduction of a new instrument of data collection analysis called the BLEI. The survey participant sample was carefully chosen to include various demographics reflecting the Arab cultural, social and economic context.

This study highlighted the importance of underpinning any BL environment with a sound infrastructure. As Figure 6.1 shows, a well-developed BL infrastructure facilitates better access to learning. Appropriate levels of access can lead to better interaction; facilitating a better response that will in turn lead to improved results and learning outcomes.





**Figure 6.1. Elements of Effective BL.**

This study also attempted to determine the nature of obstacles and challenges at Saudi universities when implementing a BL approach. Some findings from the staff and experts may help us to understand problems related to the BL environment, technology, and reliability of communication, availability of software, applications, electronic content and training.

The staff responses indicated a clear lack of IT training among students and staff, including effective use of the Internet. Consequently, educators and experts who can support the effective use of technology in education are limited in Saudi Arabia. While the number of people with Internet access in Saudi is rapidly increasing, the Internet speed is slow across most universities in Saudi Arabia and is a deterrent to distance learning initiatives. This has also kept away companies, institutions and individuals investing in e-learning initiatives to a certain extent. However, with the introduction of fibre optics, this scenario is changing rapidly.

Tertiary obstacles are the persistent Internet illiteracy, poor English language skills and general resistance amongst the people to adopt new technologies,

particularly in the education sector. Many studies, including this one, suggest a general lack of belief in the idea of Internet-based teaching and learning and in the positive impact of technology on all walks of life. Some positive qualitative responses obtained in the study indicate that this attitude is changing. A chain reaction has led to the current situation. The information technology experts have not done enough to popularise and equip the people to use it effectively, which has led to ill-informed staff and experts who are unable to exploit the potential of new technology; hence, no new skills are transferred to the students. The results of the study showed that lack of availability of the right infrastructure and the paucity appropriate training to exploit the technology-based methods is the main obstacles on the road to large-scale BL implementation in Saudi Arabia.

Although the studies that were conducted in Saudi Arabia to investigate the impact of blended learning and their perceptions have been conducted recently, given the rate of growth of technology in education within KSA region, studies on blended learning are still very scarce. This study aims to fill the gap that exists in literature within this context. Because the status of higher education in Saudi Arabia necessitates an urgent solution, it is recommended that providing the required infrastructure; orientation for new students and instructors facilitates the transition to a blended learning university environment. In addition, it is recommended to use feedback from students and instructors via regular course evaluations and other means to accurately inform university action plans.

## REFERENCES

- Abazi-Bexheti, L.; Apostolova-Trpkovska, M.; Kadriu, A, "Learning management systems: Trends and alternatives," *Information and Communication Technology, Electronics and Microelectronics (MIPRO), 2014 37th International Convention on*, vol., no., pp.773, 777, 26-30 May 2014
- Abouchedid, K., & Eid, G. M. (2004). E-learning challenges in the Arab world: Revelations from a case study profile. *Quality Assurance in Education*, 12(1), 15-27.
- Academic Ranking of World Universities (ARWU). (2009) 'Academic ranking of world universities 2009' [Online]. Available at: [http://www.arwu.org/ARWU2009\\_5.jsp](http://www.arwu.org/ARWU2009_5.jsp) (Accessed: 2 May 2010).
- Adas, D. and Abu Shmais, W. (2011) 'Students' perceptions towards blended learning environment using the OCC', *An-Najah University Journal for Research in Humanities*, 25(6), pp. 1681-1710.
- Adeoye, B. and Wentling, R. (2007) 'The relationship between national culture and the usability of an E-Learning system', *International Journal on E-Learning*, 6(1), pp. 119-146.
- Al Balawi, M. (2010) 'Web-based instructions: An assessment of preparedness of conventional universities in Saudi Arabia', in Mukerji, S. and Tripathi, P. (eds.), *Cases on transnational learning and technologically enabled environments*. Hershey, PA: Information Science Reference, pp. 302-326 [Online]. Available at: doi: 10.4018/978-1-61520-749-7.ch017.
- Al-Anqari, K. (2008) *Higher education in Saudi Arabia, summary report*, Ministry of Higher Education, Saudi Arabia.
- Al-Dugairy, H. (2009) 'Negative effect of the use of the Internet on female university students and the role of the social services towards them', *Al-Riyadh Newspaper*.
- Al-Fadhli, S. (2008) 'Students' perceptions of e-learning in Arab society: Kuwait University as a case study', *E-Learning and Digital Media*, 5(4), pp. 418-428 [Online]. Available at: <http://dx.doi.org/10.2304/elea.2008.5.4.418> (Accessed: 20 February 2013).
- Al-Ghaith W A, Sanzogni L and Sandhu K. 2010. 'Factors influencing the adoption and usage of online services in Saudi Arabia'. *The Electronic Journal of Information Systems in Developing Countries*, 40
- Al-Harbi, K.A.S. (2011) 'e-Learning in the Saudi tertiary education: Potential and challenges', *Applied Computing and Informatics*, 9(1), pp. 31-46.
- Al-Jahni, A., Obayya, S. and Skinner, H. (2010) 'Encouraging effective blended learning in higher education in the Kingdom of Saudi Arabia', in *Proceedings of the 5th International Blended Learning Conference, 'Developing Blended Learning Communities'*, University of Hertfordshire, 16-17 June.
- Al-Khalifa S, (2011), E-learning in Saudi Arabia, Cases on Challenges Facing E-Learning and National Development: *Institutional Studies And Practices (Volume II, Chapter 31)*, 2011
- Al-Khalifa, H. (2010) 'E-learning and ICT integration in colleges and universities in Saudi Arabia', *eLearn Magazine*, March 9 [Online]. Available at: <http://elearnmag.acm.org/featured.cfm?aid=1735849>.

- Al-Khalifa, H. S. (2009). The state of distance education in Saudi Arabia. *eLearn*, 2009(10), 9.
- Al-Othman, A. (2009) 'Towards excellence in higher education: King Saud University's experience'. King Saud University, 12 December [Online]. Available at: <http://ksu.edu.sa/ar> (Accessed: 6 December 2011).
- Al-Saggaf, Y. (2004) 'The effect of online community on offline community in Saudi Arabia', *Electronic Journal of Information Systems in Developing Countries*, 16(2), pp. 1-16.
- Al-Wakeel, S. (2001) 'Innovation in computer education curriculum for the computerization of Saudi Arabia: a model for developing countries', paper presented at the Frontiers in Education Conference, Reno, NV, USA, 10-13 October.
- Al-Wehaibi, K., Al-Wabil, A., Alshawi, A. and Alshankity, Z. (2008) 'Barriers to Internet adoption among faculty in Saudi Arabian universities', in Barker, P. and Rebelsky, S. (eds.), *Proceedings of World Conference on Educational Multimedia*.
- Albalawi, M.S. (2007) *Critical factors related to the implementation of web-based instruction by higher-education faculty at three universities in the Kingdom of Saudi Arabia*. Unpublished D Ed dissertation, University of West Florida.
- Alebaikan, R. and Troudi, S. (2010) 'Blended learning in Saudi universities: Challenges and perspectives', *Journal of Research in Learning Technology*, 18(1), pp. 49-59.
- Alhazmi, F.A. (2010) *Job satisfaction among female head teachers in Saudi Arabian secondary schools: A qualitative perspective*. Unpublished PhD thesis, University of Southampton.
- Aljahni, A. (2008) *E-learning and the future of learning in the Kingdom of Saudi Arabia*. Unpublished M Sc dissertation, University of Glamorgan.
- Aljahni, A., Al-Begain, K. and Skinner, H. (2011) 'ICT infrastructure of blended learning in higher education', in *Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2011*. Chesapeake, VA: AACE, pp. 524-533.
- Aljahni, A., Al-Begain, K. and Skinner, H. (forthcoming) 'Development and validation of the blended learning environment instrument (BLEI) in higher education', *Journal of Interactive Learning Research (JILR)*.
- Aljohani, H. (2009) *The study of integrating information technology in Abna'a girls schools in Riyadh from the perspective of teachers*. Unpublished MSc dissertation, King Saud University.
- Allen, E., Seaman, J. and Garrett, R. (2007) *Blending in the extent and promise of blended education in the United States*. USA: Sloan-C.
- Almalki, A.M. (2011) *Blended learning in higher education in Saudi Arabia: A study of Umm Al-Qura University*. Unpublished PhD thesis, RMIT University.
- AlMegren, A. (2011) 'Status of e-learning at several major universities in Saudi Arabia', in *Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2011*. Chesapeake, VA: AACE, pp. 1022-1028 [Online]. Available at: <http://www.editlib.org/p/38845> (Accessed: 6 December 2011).
- AlMegren, A. and Yassin, S. (2013) 'Learning object repositories in e-learning: Challenges for learners in Saudi Arabia', *European Journal of Open, Distance and e-Learning*, 16(1).

AlMegren, A., Al-Yafei, A. and Hashem, A. (2007), 'Pilot nationwide e-learning provision in the Kingdom of Saudi Arabia: Issues and challenges', paper presented at the 21<sup>st</sup> Asian Association of Open University Conference, 29-31 October 2007, Kuala Lumpur, Malaysia.

AlMohysin, E. (2008) 'Resettlement of e-learning', paper presented at the First e-Learning Conference of the Ministry of Education, Riyadh, Saudi Arabia, 24-26 May.

Alotaibi, K. N. R. (2013). The effects of blended learning on developing critical thinking skills. *Education Journal*, 2(4), 176-185.

Alrtimi, M. (2008) *The IT infrastructure and the future of education* [Online]. Available at: [http://yaacourse.com/yaacourse/phocadownload/folder-19/04040808\\_1984.pdf](http://yaacourse.com/yaacourse/phocadownload/folder-19/04040808_1984.pdf) (Accessed: 3 October 2010).

Alyawar, A. (2009), 'Barriers to open education in the Arab Open University (AOU) of Jeddah: Students' perspective', *Journal of Risalat Ul-Khaleej Al-Arabi*, 112.

Asharq Al-Awsat, A. (2007) 'Higher education completed its development system to keep pace with the eighth development plan', 23 November [Online]. Available at: <http://www.aawsat.com/print.asp?did=446738&issueno=10587> (Accessed: 15 January 2010).

Aycock, A., Garnham, C., & Kaleta, R. (2002). Lessons learned from the hybrid course project. *Teaching with technology today*, 8(6), 9-21.

Badawi, M. (2009) 'Using blended learning for enhancing EFL prospective teachers' pedagogical knowledge and performance', paper presented at the Learning & Language Conference, Cairo, Egypt, 14-15 March.

Bates AWT (2005) *Technology, E-learning and Distance Education*, Routledge Studies in Distance Education, Routledge, 2005

Bates AWT (2013) *e-Study Guide for Technology, e-learning and Distance Education*, textbook by A.W. (Tony) Bates: Education, Alternative education; Edition 2, Cram101 Textbook Reviews, 2013

Bates, A. T. (1994). Hello, technology! Goodbye, distance teaching institutions?. *Open praxis: the bulletin of the International Council for Distance Education*, (2), 5-7.

Bates, A. T. (1994b). Educational Multimedia in a Networked Society. *Open praxis: the bulletin of the International Council for Distance Education*, (2).

Bates, A. T., & Sangrà, A. (2011). *Managing technology in higher education: Strategies for transforming teaching and learning*. John Wiley & Sons.

Bekkers, M., Simpson, S., Dunstan, F., Hood, K., Hare, M., Evans, J. and Butler, C. (2010) 'Enhancing the quality of antibiotic prescribing in primary care: qualitative evaluation of a blended learning intervention', *BMC Family Practice*, 11, p. 34.

Bell, R. L., & Garofalo, J. (2005). Technology Reviews: Projecting Science and Mathematics. *School Science and Mathematics*, 105(1), 48-51.

Benselama, A., Hennache, A. and Ben Saleh, M. (2009) 'Designing and evaluating the effectiveness of the virtual learning environment (VLE) in Saudi Arabia: a review and recommendations', *International Conference on Computer Science and Information Technology Journal of IEEE*, pp. 210-214.

Bersin, J. (2000) 'Building blocks of an e-learning infrastructure', paper presented at the KMWorld 2000 Conference, Toronto, Canada, 12–15 September.

Bersin, J. (2004) *The blended learning book: Best practices, proven methodologies, and lessons learned*. USA: Pfeiffer John Wiley & Sons, Inc.

Billings, B. (2008) 'IT infrastructure in higher education', Washington Higher Education Coordinating Board [Online]. Available at: <http://www.hecb.wa.gov/boardmtgs/materials/documents/TAB1ABobBillings.pdf> (Accessed: 15 January 2011).

Bliuc, A. M., Goodyear, P., & Ellis, R. A. (2007). Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *The Internet and Higher Education*, 10(4), 231-244.

Booker, Q.E. and Rebman, C.M., Jr. (2005) 'E-student retention: factors affecting customer loyalty for on-line program success', *Issues in Information Systems*, 6(1), p. 184.

Bothma, C.H. and Cant, M.C. (2011) 'Adopting learning technologies: from belief to practice', *Educational Studies*, 37(4), pp. 375-389.

Breslow, Harris and Allagui, Ilhem, A Decade of Internet Time in the Arab World: Or How to Stop Worrying and Love the Internet (September 15, 2011), Available at SSRN: <http://ssrn.com/abstract=1928002>

British Educational Research Association (BERA). (2004) *Revised ethical guidelines for educational research* [Online]. Available at: <http://www.bera.ac.uk/publications/Ethical%20Guidelines> (Accessed: 6 January 2013).

Browning, A. and Lefte, A. (2004) 'Blended learning strategy improves business writing skills', *Journal of Developments in Business Simulation and Experiential Learning*, 31, p. 44.

Buchberger, F. (2000). Searching for a Missing Link: Towards a Science of/for the Teaching Profession.

Byrne, M., Flood, B. and Willis, P. (2002) 'Approaches to learning of European business students', *Journal of Further and Higher Education*, 26(1), pp. 19-28.

Carr, A. M., Brown, C., Cox, G., Czerniewicz, L., Deacon, A., & Morrison, A. (2005, August). Communities of practice in staff development: Learning to teach with technology. In Proceedings of the 7th Annual Conference on World Wide Web applications, Cape Town, South Africa (pp. 29-31).

CCP (2013), The Campus Computing Survey, The Campus Computing Project, <http://www.campuscomputing.net/survey>

Central Department of Statistics and Information (CDSI). (2012) 'Total population 2012' [Online]. Available at: <http://www.cdsi.gov.sa/english/> (Accessed: 7 May 2012).

Chandra, V. & Fisher, D.L. (2006b) 'Assessing the effectiveness of a blended web-based learning environment in an Australian high school', in Fisher, D.L. and Khine, M.S. (eds.), *Contemporary approaches to research on learning environments: Worldviews*. World Scientific, pp. 461-478.

Chandra, V. and Fisher, D. (2006a) 'The application of the results of learning environments research to an innovative teacher-designed website', in Jeffrey, P.L. (ed.), *Proceedings of AARE 2005 International Education Research Conference, UWS Parramatta, Melbourne*.

Chang, V. and Fisher, D. (2001) 'The validation and application of a new learning environment instrument to evaluate online learning in higher education', paper presented at the Australian Association for Research in Education, Fremantle, WA, May 2.

Chew, E. (2009) *A blended learning model in higher education: A comparative study of blended learning in the UK and Malaysia*. Unpublished PhD dissertation, University of Glamorgan.

Chia-Wen, T., Pei-Di, S. and Meng-Chuan, T. (2011) 'Developing an appropriate design of blended learning with web-enabled self-regulated learning to enhance students' learning and thoughts regarding online learning', *Behaviour & Information Technology*, 30(2), pp. 261-271.

CITC 2013, Electronic Newsletter, Version 17, Issue Dec. 2013, Available at [http://www.citc.gov.sa/English/MediaCenter/Newsletter/Documents/PR\\_ENL\\_017.pdf](http://www.citc.gov.sa/English/MediaCenter/Newsletter/Documents/PR_ENL_017.pdf), Accessed 15/06/2014

Communications and Information Technology Commission (CITC). (2007) *Number of Internet users in Saudi Arabia*. Riyadh: CITC.

Cook, D. A. (2009). The failure of e-learning research to inform educational practice, and what we can do about it. *Medical teacher*, 31(2), 158-162.

Cooke, R. (2008) 'On-line innovation in higher education'. Report to the Department for Innovation, Universities and Skills [Online]. Available at: [http://webarchive.nationalarchives.gov.uk/+http://www.dius.gov.uk/policy/documents/online\\_innovation\\_in\\_he\\_131008.pdf](http://webarchive.nationalarchives.gov.uk/+http://www.dius.gov.uk/policy/documents/online_innovation_in_he_131008.pdf) (Accessed: 20 September 2010).

Cooner, T. (2010) 'Creating opportunities for students in large cohorts to reflect in and on practice: lessons learnt from a formative evaluation of students' experiences of a technology-enhanced blended learning design', *British Journal of Educational Technology*, 41(2), pp. 271-286.

Creswell, J.W. (1998) *Qualitative inquiry and research design: choosing among five traditions*. Thousand Oaks, CA: Sage.

Curran, J.M. and Rosen, D.E. (2006) 'Student attitudes toward college courses: an examination of influences and intentions', *Journal of Marketing Education*, 28(2), pp. 135-148.

Curtis Bonk, J., Elaine Khoo, (2014), *Adding Some TEC-VARIETY*, CreateSpace Independent Publishing, USA, May 2014, ISBN 978-1496162724

Curtis Bonk, J., Charles Graham, R. (2012), "The Handbook of Blended Learning: Global Perspectives, Local Designs", John Wiley and Sons

Dalsgaard, C. and Godsk, M. (2007) 'Transforming traditional lectures into problem-based blended learning: challenges and experiences', *Open Learning*, 22(1), pp. 29-42.

Davis, H. C., & Fill, K. (2007). Embedding blended learning in a university's teaching culture: Experiences and reflections. *British Journal of Educational Technology*, 38(5), 817-828.

Dede, C. (2005). Millennial Learning Styles. *Educause Quarterly*, 28(1).

Demiray, U. (2010a) 'Cases on challenges facing e-learning and national development: Institutional studies and practices', *e-Learning Practices, Journal of the Education Resources Information Centre (ERIC)*, 1, pp. 107-131.

Demiray, U. (2010b) 'Cases on challenges facing e-learning and national development: Institutional studies and practices', *e-Learning Practices, Journal of the Education Resources Information Centre (ERIC)*, 2, pp. 1009-1028.

Dewey, J. (1938). Education and experience.

Diaz, V. (2010). Web 2.0 and emerging technologies in online learning. *New Directions for Community Colleges*, 2010(150), 57-66.

Digital Curation Centre (DCC). (n.d.) 'What is the Digital Curation Centre?' [Online]. Available at: <http://www.dcc.ac.uk/> (Accessed: 18 September 2010).

Downes, S. (2010). Learning networks and connective knowledge.

Driscoll, M. (2002) 'Blended learning: let's get beyond the hype', *E-Learning*, 3(3), pp. 1-54.

Dziuban, C. and Moskal, P. (2011) 'A course is a course is a course: Factor invariance in student evaluation of online, blended and face-to-face learning environments'. *Internet and Higher Education*, 14(4), pp. 236-241.

Dziuban, C., Hartman, J., Cavanagh, T. & Moskal, P. (2011a), "Blended Courses as Drivers of Institutional Transformation", in Kitchenham, A. (Ed.), *Blended Learning across Disciplines: Models for Implementation*, IGI Global, Hershey, PA

Dzubian, C., Hartman, J. L., & Moskal, P. D. (2004, March 30). Blended Learning. *Educause* (7), pp. 1-12

e-Infrastructure Reflection Group (e-IRG). (n.d.) 'About e-IRG' [Online]. Available at: <http://www.e-irg.eu/> (Accessed: 23 September 2010).

E-learning Deanship of King Khalid University (ELD). (n.d.) 'E-learning Deanship of King Khalid University: E-learning at KKU' [Online]. Available at: <http://elc.kku.edu.sa/en/node/32> (Accessed: 10 February 2010).

ECTS (2009), *ECTS Users' Guide*, Office for Official Publications of the European Communities, European Commission, doi: 10.2766/88064

Ellis, R.A., Jarkey, N., Mahony, M.J., Peat, M. and Sheely, S. (2007) 'Managing quality improvement of eLearning in a large, campus-based university', *Quality Assurance in Education*, 15(1), pp. 9-13.

Eom, S.B. (2012) 'Effects of LMS, self-efficacy, and self-regulated learning on LMS effectiveness in business education', *Journal of International Education in Business*, 5(2), pp. 129-144 [Online]. Available at: <http://search.proquest.com/docview/1312421410?accountid=15324> (Accessed: 7 February 2010).

Farrell, V., Boyle, L., & O'Brien, M. (2008). Educational software that supports the majority learning style. In *Conference EdTech 2008*.

Finn, A. (2002) 'Trends in e-learning', *Learning Circuits*, 3 [Online]. Available at: <http://www.learningcircuits.org/2002/nov2002/finn.htm> (Accessed: 18 March 2011).

Fraser, B.J. and Treagust, D.F. (1986) 'Validity and use of an instrument for assessing classroom psychosocial environment in higher education', *Higher Education*, 15(1), pp. 37-57.



Gansler, A. (2007) *eLearners.com research debunks myths about online learning* [Online]. Available at: <http://www.elearners.com/help/press/release-lead-survey.asp> (Accessed: 6 September 2007).

Garrison, D. and Vaughan, N.D. (2008) *Blended learning in higher education: Framework, principles and guidelines*. San Francisco, CA: Jossey-Bass.

Garrison, D. R., & Anderson, T. (2003). E-learning in the 21st century: A framework for research and practice. London: Routledge/Falmer.

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and higher education*, 7(2), 95-105

Garrison, D.R. and Kanuka, H. (2004) 'Blended learning: uncovering its transformative potential in higher education', *The Internet and Higher Education*, 7(2), pp. 95-105.

George, D. and Mallery, P. (2003) *SPSS for Windows step by step: A simple guide and reference. 11.0 update*. 4th edn. Boston: Allyn & Bacon.

Gilmore, A. and Carson, D. (1996) "Integrative" qualitative methods in a services context', *Marketing Intelligence and Planning*, 14(6), pp. 21-26.

Gliem, J.A. and Gliem, R.R. (2003) 'Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales', paper presented at the Midwest Research to Practice Conference in Adult, Continuing, and Community Education, Ohio State University, Columbus [Online]. Available at: <https://scholarworks.iupui.edu#> (Accessed: 20 October 2012).

Goh, S.C. and Fraser, B.J. (1998) 'Teacher interpersonal behaviour, classroom environment and student outcomes in primary mathematics in Singapore', in Fraser, B.J. and Tobin K.J. (eds.), *International handbook of science education*. Dordrecht: Kluwer Academic Publishers, pp. 199-229.

Graham, C. R., Allen, S., & Ure, D. (2003). Blended learning environments: A review of the research literature. Unpublished manuscript, Brigham Young University at Provo, UT.

Graham, C. R., Allen, S., & Ure, D. (2003). Blended learning environments: A review of the research literature. Unpublished manuscript, Brigham Young University at Provo, UT

Graham, C. R., Allen, S., & Ure, D. (2003). Blended learning environments: A review of the research literature. Unpublished manuscript, Provo, UT. Chicago

Graham, C.R. (2006) 'Blended learning systems: Definition, current trends, and future directions', in Bonk, C.J. and Graham, C.R. (eds.), *Handbook of blended learning: global perspectives, local designs*. San Francisco: Pfeiffer Publishing, pp. 3-21.

Graham, C.R. (2013) 'Emerging practice and research in blended learning', in Moore, M.G. (ed.), *Handbook of distance education*. 3rd edn. New York: Routledge, pp. 333-350.

Graham, C.R. and Dziuban, C.D. (2008) 'Core research and issues related to blended learning environments', in Spector, J.M. Merrill, M.D., Van Merriënboer, J.J.G. and Driscoll, M.P. (eds.), *Handbook of research on educational communications and technology*. 3rd edn. Mahwah, NJ: Lawrence Erlbaum Associates.

Grandzol, C.J. and Grandzol J.R. (2006) 'Best practices for online business education', *International Review of Research in Open and Distance Learning*, 7(1) [Online. Available at: <http://www.irrodl.org/index.php/irrodl/article/view/246/475> (Accessed: 20 January 2010).

Green, P., Skinner, H. and Blackey, H. (2010) 'E-learning support for accredited work-based learning', paper presented at the International Conference on E-Learning in the Workplace (ICELW), New York, 9–11 June.

Hajaya, N. (2010) 'The reality of e-learning in Jordanian universities', paper presented at the Role of e-Learning in Supporting Knowledge Communities Conference, Bahrain, 6–8 April.

Hall, B., & LeCavalier, J. (2000). E-learning across the enterprise. *E-Learning*, 1, 27-34.

Halverson, L.R., Graham, C.R., Spring, K.J. and Drysdale, J.S. (2012) 'An analysis of high impact scholarship and publication trends in blended learning', *Distance Education*, 33(3) [Online]. Available from: doi: 10.1080/01587919.2012.723166 (Accessed: 25 January 2013).

Hammond, N. (1993). Learning with hypertext: Problems, principles and prospects. Hypertext: A psychological perspective, 51-69. Chicago

Harnisch, H. and Taylor-Murison, L. (2012) 'Transition and technology – evaluation of blended learning delivered by university staff to 6th form students', *British Journal of Educational Technology*, 43(3), pp. 398-410.

Hay, A., Peltier, J.W. and Drago, W.A. (2004) 'Reflective learning and on-line management education: a comparison of traditional and online MBA students', *Strategic Change*, 13(4), pp. 169-182.

Haythornthwaite, C., & Andrews, R. (2011). E-learning theory and practice. London: Sage.

HEA (2005), The HE Academy benchmark methodology index, [Online]. Available: at <http://elearning.heacademy.ac.uk/wiki/index.php/Pick%26Mix> Accessed: 14/06/2014

HEA (2008), e-learning Benchmarking + pathfinder programme 2005–08, an overview. The Higher Education Academy, UK Available at: [http://www.heacademy.ac.uk/resources/detail/learningandtech/Benchmarking\\_and\\_Pathfinder\\_glossy](http://www.heacademy.ac.uk/resources/detail/learningandtech/Benchmarking_and_Pathfinder_glossy), Accessed 12/06/2014

HEA (2008b), Challenges and Realisations from the Higher Education Academy/JISC Benchmarking and Pathfinder Programme, The Higher Education Academy, UK, September 2008, Available at [https://www.heacademy.ac.uk/sites/default/files/resources/Bench\\_and\\_PathFinalReview20080926.pdf](https://www.heacademy.ac.uk/sites/default/files/resources/Bench_and_PathFinalReview20080926.pdf), Accessed 14/06/2014

HEA (2008c), Benchmarking Phase 2 Overview Report, [Online]. Available: [http://elearning.heacademy.ac.uk/weblogs/benchmarking/wpcontent/uploads/2008/04/BenchmarkingPhase2\\_BELAreport.pdf](http://elearning.heacademy.ac.uk/weblogs/benchmarking/wpcontent/uploads/2008/04/BenchmarkingPhase2_BELAreport.pdf) Accessed: 14/06/2014

Hennessey, S. and Deaney, R. (2004) *Sustainability and evolution of ICT-supported classroom practice* [Online]. Available at: <http://131.111.153.52/istl/SAE041.doc> (Accessed: 21 September 2007).

HEPI (2014), The Student Academic Experience Survey 2014: Summary and Recommendations, HEPI Report 67, Higher Education Policy Institute, UK

Heterick, B. and Twigg, C. (2003, February) *The Learning MarketSpace* [Online]. Available at: <http://www.center.rpi.edu/LForum/LM/Feb03.html> (Accessed: December 5 2003).

Higher Education Statistics. (2013) *Summary statistics of the number of graduates in higher education institutions for the academic year 2008/2009*. General Department of Planning and

Statistics, Ministry of Higher Education, Saudi Arabia [Online]. Available at: <http://www.mohe.gov.sa/AR/MINISTRY/DEPUTY-MINISTRY-FOR-PLANNING-AND-INFORMATION-AFFAIRS/HESC/UNIVERSITIESSTATISTICS/Pages/default.aspx> (Accessed: 2 May 2013).

Hiltz, S. R., & Turoff, M. (2005). Education goes digital: The evolution of online learning and the revolution in higher education. *Communications of the ACM*, 48(10), 59-64.

Howland, J., Moore, J., & Marra, R. M. (2003). Learning to solve problems with technology: A constructivist perspective

Hughes, G. (2007) 'Using blended learning to increase learner support and improve retention', *Teaching in Higher Education*, 12(3), pp. 349-363.

Hunt, L., Eagle, L. and Kitchen, P. (2004) 'Balancing marketing education and information technology: matching needs or needing a better match?' *Journal of Marketing Education*, 26(1), pp. 75-88.

Hussain, S. and Tahboob, Z. (2007) 'Arabian Gulf development Internet and innovation dynamics', paper presented at the First Asia International Conference on Modelling & Simulation, Phuket, Thailand, 27-30 March.

Hussein, A. (2009). 'The use of triangulation in social sciences research: can qualitative and quantitative methods be combined?' *Journal of Comparative Social Work*, 1, pp. 1-12.

Hye-Jung, L. and Cheolil, L. (2012) 'Peer evaluation in blended team project-based learning: what do students find important?' *Journal of Educational Technology & Society*, 15(4), pp. 214-224.

IBM. (n.d.) 'Education' [Online]. Available at: [https://www304.ibm.com/easyaccess/publicuk/gclcontent/gcl\\_xmlid/74680/](https://www304.ibm.com/easyaccess/publicuk/gclcontent/gcl_xmlid/74680/) (Accessed: 11 September 2010).

IBM (2009) 'Middlesex University and IBM sign five-year agreement to provide new IT infrastructure and disaster recovery services' [Online]. Available at: <http://www-03.ibm.com/press/uk/en/pressrelease/28690.wss> (Accessed: 11 September 2010).

International Telecommunication Union (ITU) (2010) 'Measuring the information society' [Online]. Available at: [http://www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS\\_2010\\_Summary\\_E.pdf](http://www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS_2010_Summary_E.pdf) (Accessed: 2 October 2010).

Jadwa Investment (2013) *Saudi Arabia's 2013 budget report* [Online]. Available at: <http://www.jadwa.com/en/researchsection/research/economic-research> (Accessed: 19 January 2013).

Jalia Zouhair (2010), Utilising JUSUR in an Information Systems Course, *International Journal of Education and Development using Information and Communication Technology, (IJEDICT)*, 2010, Vol. 6, Issue 4, pp.114-121

Johnson, N., Reidy, L., Droll, M., & LeMon, R. E. (2012). Program Requirements for Associate's and Bachelor's Degrees: A National Survey, Complete College, America, and <http://completecollege.org/>

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.

Joint Information Systems Committee (JISC) (n.d.) 'e-Infrastructure programme' [Online]. Available at: <http://www.jisc.ac.uk/whatwedo/programmes/einfrastructure.aspx> (Accessed: 23 September 2010).

Joint Information Systems Committee (JISC) (n.d.) 'Minister welcomes SuperJANET5' [Online]. Available at: [http://www.jisc.ac.uk/news/stories/2006/10/news\\_sj5.aspx](http://www.jisc.ac.uk/news/stories/2006/10/news_sj5.aspx) (Accessed: 23 September 2010).

Kapp, K. (n.d.) 'Writing a winning e-learning proposal', *Elearning Magazine* [Online]. Available at: [http://www.elearnmag.org/subpage.cfm?section=best\\_practices&article=19-1](http://www.elearnmag.org/subpage.cfm?section=best_practices&article=19-1) (accessed 5 September 2010).

Kearsley, G., & Lynch, W. (Eds.). (1994). *Educational technology: Leadership perspectives*. Educational Technology.

Keengwe, J. and Georgina, D. (2011) 'Transitioning face-to-face (F2F) courses to online teaching', in Barton, S et al. (eds.), *Proceedings of Global Learn 2011*. AACE, pp. 117-120 [Online]. Available at: <http://www.editlib.org/p/37157> (accessed 12 March 2013).

Keller, C., Hrastinski, S., & Carlsson, S. (2007). *Students Acceptance of E-Learning Environments: A Comparative Study in Sweden and Lithuania*.

Kendle, A. and Northcote, M. (2000) 'The struggle for balance in the use of quantitative and qualitative online assessment tasks', paper presented at the ASCILITE 2000: Learning to Choose, Choosing to Learn, Southern Cross University, Coffs Harbour, NSW.

Kerr, B. (2007, February). A challenge to connectivism. In Online Connectivism Conference. Retrieved on January (Vol. 10, p. 2008).

Kim, K., & Bonk, C. J. (2006). The future of online teaching and learning in higher education: The survey says. *Educause quarterly*, 29(4), 22.

Kim, K.J. and Bonk, C. (2006) 'The future of online teaching and learning in higher education: The survey says...' *Educause Quarterly*, 22(4), p. 23.

Kim, W. (2008) 'A proposal for a lifecycle process for hybrid learning programs', in *Proceedings of Hybrid Learning and Education, First International Conference, 13-15 August, Hong Kong, China*, pp. 17-30.

King Abdullah University of Science and Technology (KAUST) (n.d.) 'About KAUST' [Online]. Available at: <http://www.kaust.edu.sa/about/about.html> (Accessed: 27 May 2010).

King Saud University (KSU) (2009) *King Saud University self-study report (SSR)*, submitted by KSU to the National Commission for Academic Accreditation & Assessment.

King Saud University (KSU) (2013) 'Bachelor of science program in IT study plan' [Online]. Available at: [http://ccis.ksu.edu.sa/sites/ccis.ksu.edu.sa/files/Study\\_Plan\\_IT\\_1.pdf](http://ccis.ksu.edu.sa/sites/ccis.ksu.edu.sa/files/Study_Plan_IT_1.pdf) (Accessed: 8 February 2013).

Koohang, A. (2004) 'Students' perceptions toward the use of the digital library in weekly web-based distance learning assignments portion of a hybrid programme', *British Journal of Educational Technology*, 35, pp. 617-626.

Kregor, G., Breslin, M. & Fountain, W. (2012). Experience and beliefs of technology users at an Australian university: Keys to maximising e-learning potential. *Australasian Journal of Educational Technology*, 28(8), 1382-1404. <http://www.ascilite.org.au/ajet/ajet28/kregor.html>

Krieger, Z. (2007) 'Saudi Arabia puts its billions behind Western-style higher education', *The Chronicle of Higher Education*, 54(3), p. A1.

Kusen, E. and Hoic-Bozic, N. (2012) 'In search of an open-source LMS solution for higher education using a criterion-based approach', *International Journal of Learning Technology*, 7(2), pp. 115-132 [Online]. Available at: doi: <http://dx.doi.org/10.1504/IJLT.2012.047978> (Accessed: 10 November 2010).

Lanestedt, J. and Bygstad, B. (2003) 'Infrastructure for ICT-enhanced learning in higher education: a generic architecture, in Rossetti, A. (ed.), *Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, Chesapeake, VA: AACE, pp. 574-581.

Laurillard, D. (2002). Rethinking teaching for the knowledge society. *EDUCAUSE review*, 37(1), 16-24.

Lee, Y. and Nguyen, H. (2007) 'Get your degree from an educational ATM: An empirical study in online education', *International Journal on E-Learning*, 6(1), pp. 31-40.

Levitan, E.P. (2010) 'Higher education administrators' perceptions of the use of simulation games for adult learners', *Dissertation Abstracts International Section A: Humanities and Social Sciences*, p. 1224.

Li, Z., Tsai, M. H., Tao, J., & Lorentz, C. (2014). Switching to blended learning: The impact on students' academic performance. *Journal of Nursing Education and Practice*, 4(3), p245.

Lipponen, L., Lallimo, J. and Lakkala, M. (2006) 'Designing infrastructures for learning with technology', in Fisher, D.L. and (eds.), *Contemporary approaches to research on learning environments: Worldviews*. Singapore: World Scientific Publishing, pp. 449-460.

Lisewski, B., & Joyce, P. (2003). Examining the five-stage e-moderating model: designed and emergent practice in the learning technology profession. *Research in Learning Technology*, 11(1).

Lueddeke, G.R. (1999) 'Toward a constructivist framework for guiding change and innovation in higher education', *Journal of Higher Education*, 70(3), pp. 235-260.

Luke, A. (2003) 'Testimonial', in Khine, M.S. and Fisher, D. (eds.), *Technology-rich learning environments: A future perspective*. Singapore: World Scientific Publishing, p. 423.

Lunenburg, F. C. (1998). Constructivism and Technology: Instructional Designs for Successful Education Reform. *Journal of Instructional Psychology*, 25(2), 75-81.

Machnaik, J. (2002). Investigating the effect (s) of technology integration on teaching practices that may lead to the development of a community of learners. Retrieved October 20, 2005.

Mahmud, M. and Ching, W. (2013) 'Efficacy of Wikipedia as a pedagogical apparatus in the classroom', *Journal of Social Sciences and Humanities*, 4(2), p. 233.

Manal AlMarwani. (2013) Open Educational Resources in Saudi Arabia, POERUP Report May 2013, Available at: [http://poerup.referata.com/w/images/OER\\_in\\_Saudi\\_Arabia.pdf](http://poerup.referata.com/w/images/OER_in_Saudi_Arabia.pdf), Accessed 13/06/2014

Marquis, C. (2004). WebCT Survey Discovers A Blend of Online Learning and Classroom-Based Teaching Is The Most Effective Form Of Learning Today. WebCT.com. <http://www.webct.com/service/ViewContent?contentID=19295938>

Marsh, D. (2012) *Blended learning: Creating learning opportunities for language learners*. New York: Cambridge University Press.

Matthews, D. (1999). The Origins of Distance Education and Its Use in the United States. *T.H.E. Journal*, 27(2).

Mayer, R. E. (1999). Designing instruction for constructivist learning. *Instructional-design theories and models: A new paradigm of instructional theory*, 2, 141-159.

Mayes, T. (2004). Learner-centred pedagogy: individual differences between learners. JISC e-Learning Models Desk Study.

Meenakumari, J., Antony, B. and Vinay, M. (2013) 'Measuring the usage of LMS in higher education institutions: An analysis', *International Journal of Advanced Computational Engineering and Networking*, 1(2), pp. 2320-2106.

Melloy, J. (1997). Collaborative Planning through Computers. *Planning for Higher Education*, 25(4), 26-30.

Melton, B., Graf, H. and Chopak-Foss, J. (2009) 'Achievement and satisfaction in blended learning versus traditional general health course designs', *International Journal for the Scholarship of Teaching and Learning*, 3(1), pp. 1-13.

Mergel, B. (1998). Instructional design and learning theory. Retrieved January, 4, 2010.

Microsoft Academic Research (n.d.) 'Blended learning' [Online]. Available at: <http://academic.research.microsoft.com/Keyword/3635/blendedlearning?query=blended%20learning> (Accessed: 10 July 2013).

Ministry of Communications and Information Technology (2011) 'Brief history' [Online]. Available at: <http://www.mcit.gov.sa/english> (Accessed: 19 August 2013).

Ministry of Higher Education (2009) 'Royal decree appointing rectors of Dammam, Al Kharj, Shagra and Almajmaah Universities' [Online]. Available at: <http://www.mohe.gov.sa/en/news/Pages/anp52.aspx> (Accessed: 26 January 2010).

Ministry of Higher Education (n.d.) The Portal of the Ministry of Higher Education [Online]. Available at: <http://www.mohe.gov.sa> (Accessed: 25 January 2010).

Mohammed T. Simsim, Internet usage and user preferences in Saudi Arabia, *Journal of King Saud University - Engineering Sciences*, Volume 23, Issue 2, June 2011, Pages 101-107, ISSN 1018-3639, <http://dx.doi.org/10.1016/j.jksues.2011.03.006>.

MOHE (2013), University Statistics - Students, Ministry of Higher Education, Kingdom of Saudi Arabia, Available at: <http://www.mohe.gov.sa/en/studyinside/universitiesStatistics/Pages/Students.aspx>, Accessed 14/06/2014

MOHE (n.d.), E-learning and Distance Education, Ministry of Higher Education, Kingdom of Saudi Arabia, Available at <http://www.mohe.gov.sa/en/Ministry/General-administration-for-Public-relations/BooksList/book5eng.pdf#search=e%2Dlearning>, Accessed 17/06/2014

MOHE 2010, Higher Education in Saudi Arabia: Indicators and International Comparisons, Ministry of Higher Education, Kingdom of Saudi Arabia, Available at: <http://ohe.gov.sa/ar/Documents/Indicators and International Comparisons.pdf>, Accessed: 14/06/2014

MOHE 2011, Higher Education Indicators in the Kingdom of Saudi Arabia, Ministry of Higher Education, Kingdom of Saudi Arabia, Available at: <http://www.mohe.gov.sa/en/Ministry/General-administration-for-Public-relations/BooksList/stat3eng.pdf>, Accessed 14/06/2014

Moogan, Y.J. and Baron, S. (2003) 'An analysis of student characteristics within the student decision making process', *Journal of Further and Higher Education*, 27(3), pp. 272-287.

Moroney, M. (2009) 'Repurposing social networking technologies to encourage preservice teacher collaboration in online communities: A mixed methods study', paper presented at the 13th UNESCO-APEID International Conference and World Bank-KERIS High Level Seminar on ICT in Education, Hangzhou, 15-17 November.

Moroney, M., Leong, K. & Boorer, D. (n.d.) *Actual and preferred perceptions of students engaged in collaborative online learning*. Sultan Hassanul Bolkuh Institute of Education, University Brunei Darussalam.

Moskal, P., Dziuban, C., & Hartman, J. (2013). Blended learning: A dangerous idea. *The Internet and Higher Education*, 18, 15-23.

Mott, J. (2010) 'Envisioning the post-LMS era: The open learning network', *EDUCAUSE Quarterly*, 33(1), p. 18 [Online]. Available at: <http://search.proquest.com/docview/754909042?accountid=15324> (Accessed: 28 January 2013).

Nanjappa, A., & Grant, M. M. (2003). Constructing on constructivism: The role of technology. *Electronic Journal for the integration of Technology in Education*, 2(1), 38-56.

National Centre for E-Learning and Distance Learning (NCEL) (n.d.) 'The National Centre for E-Learning and Distance Learning in KSA: The vision' [Online]. Available at: <http://www.elc.edu.sa/portal/index.php?mod=content&page=20> (Accessed: 13 April 2010).

National Centre for Text Mining (NaCTeM) (n.d.) 'The NaCTeM' [Online]. Available at: <http://www.nactem.ac.uk/index.php> (Accessed: 18 September 2010).

National e-Science Centre (NeSC) (2004) 'Developing the UK's e-infrastructure for science and innovation' [Online]. Available at: <http://www.nesc.ac.uk/documents/OSI/report.pdf> (Accessed: 13 September 2010).

National Grid Service (NGS) (n.d.) 'Who we are and what we do' [Online]. Available at: <http://www.ngs.ac.uk/aboutUs> (Accessed: 18 September 2010).

NCEL (2014), The National Centre for e-Learning and Distance Learning, Ministry of Higher Education, Kingdom of Saudi Arabia, Available at: <http://portal.elc.edu.sa/portal/?q=en/aboutus>, Accessed 14/06/2014

Norberg, A., Dziuban, C., Moskal, P. (2011) A Time Based Blended Learning Model. *On the Horizon*, 19(3): 207-216, <http://dx.doi.org/10.1108/10748121111163913>

Office of the Deputy Minister for Educational Affairs (2009) *National report*. Ministry of Higher Education.

Olson, T., & Wisner, R. A. (2002). The effectiveness of web-based instruction: An initial inquiry. *The international review of research in open and distance learning*, 3(2).

Open Middleware Infrastructure Institute (OMII) (n.d.) 'About OMII' [Online]. Available at: <http://www.omii.ac.uk/> (Accessed: 18 September 2010).

Oyaid, A. (2009) *Education policy in Saudi Arabia and its relation to secondary school teachers' ICT use, perceptions, and views of the future of ICT in education*. Unpublished PhD thesis, University of Exeter.

Park, S. Y. (2009). An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioural Intention to Use e-Learning. *Educational Technology & Society*, 12(3), 150-162.

Pask, G. (1976). Styles and strategies of learning. *British journal of educational psychology*, 46(2), 128-148.

Pavan, A. (2013). A new perspective on the quest for education: The Saudi Arabian way to knowledge society. *Higher Education Studies*, 3(6), p25.

Pavlov, I.P. *Conditioned reflexes*. (Translated by G. V. Anrep) London: Oxford University Press, 1927.

Peltier, J.W., Hay, A. and Drago, W. (2006) 'Reflecting on reflection: scale extension and a comparison of undergraduate business students in the United States and the United Kingdom', *Journal of Marketing Education*, 28(1), pp. 5-16.

Pereira, J., Pleguezuelos, E., Merí, A., Molina-Ros, A., Molina-Tomás, M. and Masdeu, C. (2007) 'Effectiveness of using blended learning strategies for teaching and learning human anatomy', *Medical Education*, 41(2), pp. 189-195.

Perrin, D. G. (2005). Connectivism: A Learning Theory for the Digital Age. *International Journal of Instructional Technology and Distance Learning*, 2(1).

Picciano, A. G. (2006). Blended learning: Implications for growth and access. *Journal of asynchronous learning networks*, 10(3), 95-102.

Picciano, A. G., Seaman, J., & Allen, I. E. (2010). Educational Transformation through Online Learning: To Be or Not to Be. *Journal of Asynchronous Learning Networks*, 14(4), 17-35.

Poole, M. S. (2009). Response to Jones and Karsten," Giddens's structuration theory and information systems research. *Management Information Systems Quarterly*, 33(3), 10.

Power, M. (2008). The emergence of a blended online learning environment. *MERLOT Journal of Online Learning and Teaching*, 4(4), 503-514.

Quinton, S (2006) 'A brief critique on the future of learning: assessing the potential for research', in Fisher, D.L. and Khine, M.S. (eds.), *Contemporary approaches to research on learning environments: Worldviews*. Singapore: World Scientific Publishing, pp. 543-578.

Quraishi, A.J. (2012) 'More Saudi universities boarding e-learning bandwagon', *Arab News*, 10 May [Online]. Available at: <http://www.arabnews.com/more-saudi-universities-boarding-e-learning-bandwagon> (Accessed: 15 July 2013).

Ramsden, P. (1993). Theories of learning and teaching and the practice of excellence in higher education. *Higher Education Research and Development*, 12(1), 87-97.

Reisman, S. (2014b). The Future of Online Instruction, Part 2. *Computer*, 47(6), 82-84.



- Reisman, S., (2014), "The Future of Online Instruction, Part 1," *Computer*, 47(4), 92-93.
- Rhema, A. and Miliszewska, I. (2010) 'Towards e-learning in higher education in Libya', *Journal of Issues in Informing Science and Information Technology*, 7, p. 2.
- Ritchie, J. and Lewis, J. (2003) *Qualitative research practices: a guide for social science students and researchers*. London: Sage.
- Sadah, J. and Sartawi, A. (2007) *The use of computers and the Internet in the fields of education*. Amman: Dar AlShroug.
- Safara, S. (2008) 'The pros and cons of Second Life as a learning environment' [Online]. Available at: <http://ce.sharif.edu/courses/89-90/2/ce221-1/resources/root/The+Pros+and+Cons+of+Second+Life.pdf> (Accessed: 15 July 2013).
- Salinas, M. F. (2008). From Dewey to Gates: A model to integrate psych educational principles in the selection and use of instructional technology. *Computers & Education*, 50(3), 652-660.
- Salmon, G. (1995). Tardy assignment submission by distance learning management students. *Open Learning*, 10(3), 58-62.
- Salmon, G. (2005). Flying not flapping: a strategic framework for e-learning and pedagogical innovation in higher education institutions. *Research in Learning Technology*, 13(3).
- Salmon, G. (2013). *E-tivities: The key to active online learning*. Second Ed., Routledge.
- Salomon, G., & Perkins, D. N. (1998). Individual and social aspects of learning. Review of research in education, 1-24. Chicago
- Samover, L.A., Porter, R. E., & McDaniel, E. R. (2009). *Communication between cultures*. Boston: Wadsworth Engage Learning.
- Saudi Arabia General Investment Authority (SAGIA) n.d., 'ICT', accessed 1 October 2010, <<http://www.sagia.gov.sa/en/Key-sectors/ICT/>>.
- Saudi Arabian Monetary Agency (2009) *Forty-fifth annual report: 'The latest economic developments, research and statistics department'* [Online]. Available at: [http://www.sama.gov.sa/sites/samaen/reportsstatistics/reportsstatisticslib/5600\\_r\\_annual\\_en\\_45\\_2009\\_08\\_31.pdf](http://www.sama.gov.sa/sites/samaen/reportsstatistics/reportsstatisticslib/5600_r_annual_en_45_2009_08_31.pdf) (Accessed: 1 February 2010)
- Saudi Gazette* (2013) 'Saudi investment in education tripled in just a decade, focuses on enhancing human capital' [Online]. Available at: <http://www.saudigazette.com.sa/index.cfm?home.con&contentid=20130127150738> (Accessed: 21 August 2013).
- Saunders, G., & Klemming, F. (2003). Integrating Technology into a Traditional Learning Environment Reasons for and Risks of Success. *Active learning in higher education*, 4(1), 74-86.
- Shehabat, M. and Mahdi, S. (2009) 'E-learning and its impact to the educational system in the Arab world', paper presented at the International Conference on Information Management and Engineering, Kuala Lumpur, Malaysia, 3-5 April.
- Shepherd, J 2012, 'University students spend no more time with lecturers than six years ago', *Guardian*, 17 May [Online]. Available at: <http://www.guardian.co.uk/education/2012/may/17/students-time-lecturers> (Accessed: 20 January 2013).

- Sherimon, C., Vinu, P. and Krishnan, R. (2011) 'Enhancing the learning experience in blended learning systems: a semantic approach', in *Proceedings of the International Conference on Communication, Computing & Security (ICCCS '11)*. New York: ACM, pp. 449-452 [Online]. Available at: <http://doi.acm.org/10.1145/1947940.1948032> (Accessed: 5 July 2013).
- Sherron, G. T., & Boettcher, J. V. (1997). *Distance learning: The shift to interactivity* (Vol. 17). Boulder, CO: CAUSE.
- Shubin, S, Zhiqiang, C, Shuai, Z., Shudong, S. and Junqiang, W. (2010) 'Hybrid learning mode for industrial engineering specialized courses in China', in *Proceedings of Lecture Notes in Computer Science, Hybrid Learning, Third International Conference, August 16-18, Beijing, China*, pp. 316-325.
- Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International journal of instructional technology and distance learning*, 2(1), 3-10.
- Silverman, D. (2001) *Interpreting qualitative data: Methods for analysing talk, text and interaction*. 2nd edn. London: Sage.
- Simsim M T. 2011. 'Internet usage and user preferences in Saudi Arabia'. *Journal of King Saud University-Engineering Sciences*, 23(2), 101-107
- Sinclair, J. (2011) 'Student satisfaction with online learning: Lessons from organizational behaviour', *Research in Higher Education Journal*, 11, pp. 1-18.
- Singh, H. (2003) 'Building effective blended learning programs', *Educational Technology*, 43(6), pp. 51-54.
- Singh, H. and Reed, C. (2001) "*A white paper: Achieving success with blended learning*". Centre Software.
- Skelton, D. (2008) 'An investigation into the learning environments of blended delivery (e-learning and classroom) in a tertiary environment', *International Journal of Learning*, 15(5), pp. 85-94.
- Skinner, H. and Blackey, H. (2009) 'A British course or a British educational experience? Comparisons from a UK university', paper presented at the HEA Business, Management, Accounting and Finance Subject Centre Conference, Cardiff, 28-29 April.
- Skinner, W. (1974). The focused factory. *Harvard Business Review*.
- Smith, L., & Abouammoh, A. (Eds.). (2013). *Higher Education in Saudi Arabia. Achievements, Challenges and Opportunities*. The Netherlands: Springer
- Smythe, M. (2012). *Toward a framework for evaluating blended learning*. In *ASCILITE-Australian Society for Computers in Learning in Tertiary Education Annual Conference (Vol. 2012, No. 1)*.
- Snart, J. (2010) *Hybrid learning: The perils and promise of blending online and face-to-face instruction in higher education*. Santa Barbara, CA: Praeger.
- Spector, M.J. (ed.) (2008) *Handbook of research on educational communications and technology*. 3rd edn. New York: Lawrence Erlbaum Associates [Online]. Available at: <http://alice.library.ohiou.edu/record=b4428258~S7> (Accessed: 15 February 2013).

Staker, H. and Horn, M. (2012) *Classifying K-12 blended learning* [Online]. Available at: <http://www.innosightinstitute.org/innosight/wp-content/uploads/2012/05/Classifying-K-12-blended-learning2.pdf> (Accessed: 26 May 2013).

Steffens, D. and Reiss, M. (2010) 'Performance of blended learning in university teaching: determinants and challenges, *Journal of E-Learning and Education (ELEED)*, 6.

Sun Flight Avionics (2005) *White paper: Pros and cons of course delivery methods* [Online]. Available at: [http://www.sunflightavionics.com/resources/Course\\_Delivery\\_Paper\(1\).pdf](http://www.sunflightavionics.com/resources/Course_Delivery_Paper(1).pdf) (Accessed: 24 November 2010).

Taylor, P. and Maor, D. (2000) 'Assessing the efficacy of online teaching with the constructivist on-line learning environment survey', in Herrmann, A. and Kulski, M.M. (eds.), *Flexible futures in tertiary teaching. Proceedings of the 9th Annual Teaching Learning Forum, 2-4 February, Curtin University of Technology, Perth* [Online]. Available at: <http://lsn.curtin.edu.au/tlf/tlf2000/taylor.html> (Accessed: 1 October 2012).

*Telecom & Digital World Magazine* (2007) 'Seminar of King Abdullah University of Science and Technology', 230.

Teo, T. S., Lim, V. K., & Lai, R. Y. (1999). Intrinsic and extrinsic motivation in Internet usage. *Omega*, 27(1), 25-37.

Thomas, P. Y. (2010). Towards developing a web-based blended learning environment at the University of Botswana (Doctoral dissertation).

Times Higher Education Asia (THE) (2013) 'Asia university rankings 2013' [Online]. Available at: <http://www.timeshighereducation.co.uk/world-university-rankings/2012-13/regional-ranking/region/asia> (Accessed: 3 January 2013).

Top Universities (2009) 'The QS world university rankings 2009 – life sciences and biomedicine' [Online]. Available at: <http://www.topuniversities.com/university-rankings/worlduniversity-rankings/2009/subject-rankings/life-sciences-bio-medicine> (Accessed: 2 May 2010).

Torrison-Steele, G. (2002) "'Technology for the sake of learning" – A planning approach for integrating new technologies in tertiary learning environments' [Online]. Available at: <http://ausweb.scu.edu.au/aw02/papers/refereed/torrison/index.html> (Accessed: 10 August 2013).

Torrison-Steele, Geraldine (2011). This Thing Called Blended Learning — A Definition and Planning Approach. In Krause, K., Buckridge, M., Grimmer, C. and Purbrick-Illek, S. (Eds.) *Research and Development in Higher Education: Reshaping Higher Education*, 34 (pp. 360 – 371). Gold Coast, Australia, 4 – 7 July 2011.

Toth, E., Morrow, B.L. and Ludvico, L.R. (2009) 'Designing blended inquiry learning in a laboratory context: a study of incorporating hands-on and virtual laboratories', *Innovative Higher Education*, 33(5), pp. 333-344.

Twigg, C. A. (2003). Models for online learning. *Educause review*, 28-38.

U.S. Department of Education (2010) *Transforming American education learning powered by technology: National Educational Technology Plan 2010* [Online]. Available at: <http://www.unccd.ch/electronic-learning> (Accessed: 5 October 2010).

U.S.-Saudi Arabian Business Council (USSABC) (2013) 'Saudi Arabia released 2013 national budget' [Online]. Available at: <http://www.us-sabc.org> (Accessed: 19 January 2013).

UCISA 2001, Management and implementation of Virtual Learning Environments, UCISA, Available at [http://www.ucisa.ac.uk/~media/groups/tlig/vle\\_surveys/VLEsurvey\\_pdf.ashx](http://www.ucisa.ac.uk/~media/groups/tlig/vle_surveys/VLEsurvey_pdf.ashx), Accessed on 03/06/2014

UK's Education and Research Network (n.d.) 'What is Access Grid?' [Online]. Available at: <http://www.ja.net/services/video/agsc/AGSCHome/> (Accessed: 18 September 2010).

Umm Al-Qura University (UQU) (2007) *Umm Al-Qura University: A brief history* [Online]. Available at: <http://uqu.edu.sa/page/en/48> (Accessed: 15 March 2010).

UNESCO-APEID International Conference and World Bank (2009) KERIS High Level Seminar on ICT in Education, Hangzhou, 15–17 November.

United Nations Convention to Combat Desertification (UNCCD) Project Management (2010) 'Electronic learning' [Online]. Available at: <http://www.unccd.ch/electronic-learning> (Accessed: 2 October 2010).

University of Dammam (UD) (2013) *Academic programs* [Online]. Available at: [http://www.ud.edu.sa/DU/en/colleges/col\\_engineering/col\\_engg/COL\\_ENGG\\_PROG\\_EN](http://www.ud.edu.sa/DU/en/colleges/col_engineering/col_engg/COL_ENGG_PROG_EN) (Accessed: 8 February 2013).

Vaughan, N. (2007). Perspectives on blended learning in higher education. *International Journal on ELearning*, 6(1), 81-94

VC (2012), Researching Virtual Initiatives in Education, Virtual Campuses, Europe, Available at: <http://virtualcampuses.eu/index.php/ELTI>, Accessed 14/06/2014

Verma, G.K. and Mallick, K. (1999) *Research in education: perspectives and techniques*. London: Flamer.

Vignare, K. (2007) 'Review of literature blended learning: Using ALN to change the classroom – will it work?' in Pacino, A.G. and Dziuban, C.D. (eds.), *Blended learning: research perspectives*. Needham, MA: The Sloan Consortium, pp. 37-63.

Vygotsky, L. S. (1978). *Mind and society: The development of higher mental processes*.

Walker, S.L. and Fraser B.J. (2005) 'Development and validation of an instrument for assessing distance education learning environments in higher education: The Distance Education Learning Environments Survey (DELES)', *Learning Environments Research*, 8, pp. 289-308.

Wallen, G., Cusack, G., Parada, S., Miller, C. and Cartledge, T. (2011) 'Evaluating a hybrid web-based basic genetics course for health professionals', *Nurse Education Today*, 31(6), p. 638.

Watson, J. (2008) *Blended learning: The convergence of online and face-to-face education*. Vienna, VA: North American Council for Online Learning [Online]. Available at: [http://www.inacol.org/research/promisingpractices/NACOL\\_PP-BlendedLearning-lr.pdf](http://www.inacol.org/research/promisingpractices/NACOL_PP-BlendedLearning-lr.pdf) (Accessed: 17 November 2012).

Webometrics (2010) 'World universities ranking on the web: Top Arab world' [Online]. Available at: [http://www.webometrics.info/top100\\_continent.asp?cont=aw&zoom\\_highlight=king+saud+university+](http://www.webometrics.info/top100_continent.asp?cont=aw&zoom_highlight=king+saud+university+) (Accessed: 2 May 2010).

Weerakkody, V. (2008). Factors Affecting Attitudes Towards Broadband Adoption in the Kingdom of Saudi Arabia. In Y. Dwivedi, A. Papazafeiropoulou, & J. Choudrie (Eds.) *Handbook of*

*Research on Global Diffusion of Broadband Data Transmission* (pp. 380-393). Hershey, PA: Information Science Reference.

Whelan, T. J. (2007). Anonymity and confidentiality: Do survey respondents know the difference. In Poster presented at the 30th annual meeting of the Society of Southeastern Social Psychologists, Durham, NC. Chicago

White, S. and Sykes, A. (2012) 'Evaluation of a blended learning approach used in an anatomy and physiology module for pre-registration healthcare students', in *Proceedings of eLmL 2012, the Fourth International Conference on Mobile, Hybrid, and On-line Learning*. ThinkMind/IARIA, pp. 1-9.

Wong, A.F., Choon-Lang, Q., Divaharan, S., Woon-Chia, L., Peer, J. and Williams, M.D. (2006) 'Singapore students' and teachers' perceptions of computer-supported project work classroom learning environments', *Journal of Research on Technology in Education*, 38(4), pp. 449-479.

World Economic Forum (2010) *Global competitiveness report 2010-2011* [Online]. Available at: <http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm> (Accessed: 10 September 2010).

Yamani, S. (2006) "Toward a national education development paradigm in the Arab world: A comparative study of Saudi Arabia and Qatar", *Fletcher School Online Journal for Issues Related to Southwest Asia and Islamic Civilization* [Online]. Available at: [http://fletcher.tufts.edu/al\\_nakhlah/archives/spring2006/yamani.pdf](http://fletcher.tufts.edu/al_nakhlah/archives/spring2006/yamani.pdf) (15 December 2009).

Yeasmin, S. (2012) "'Triangulation" research method as the tool of social science research', *BUP Journal*, 1(1).

Yin, R.K. (1994) *Case study research: Design and methods*. Rev. edn. Applied Social Research Methods Series, vol. 5, Newbury Park, CA: Sage Publications.

Young, M.R., Klemz, B.R. and Murphy, J.W. (2003) 'Enhancing learning outcomes: The effects of instructional technology, learning styles, instructional methods, and student behaviour', *Journal of Marketing Education*, 25(2), pp. 130-142.

Zerbe, A. (2010) 'What is hybrid or blended learning?' [Online]. Available at: <http://blog.aeseducation.com/2010/03/what-is-hybrid-or-blended-learning/> (Accessed: 9 February 2004).

## **APPENDICES**

### **APPENDIX A: The Blended Learning Environment Instrument (BLEI)**

As a higher education student, you have received this survey on 'Encouraging Effective Blended Learning in Higher Education in the Kingdom of Saudi Arabia'. The survey has been designed to gather the views of higher education students to assess and identify the current status of blended learning in higher education in the Kingdom of Saudi Arabia and gain a picture of their satisfaction of using education technology with traditional learning.

To help me in my data collection, please take a few minutes to fill out the electronic survey, which is available in both English and Arabic. The survey will take approximately 30 minutes to complete. Please feel free to circulate this survey, as you deem necessary to ensure that all relevant perspectives are represented.

I would like to thank you in advance for your participation in this research.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Areej Attiyah Aljahni

Faculty of Advanced Technology

University of Glamorgan

Cardiff, UK

[aaljahni@glam.ac.uk](mailto:aaljahni@glam.ac.uk)

**The following definitions are used in the survey:**

**Blended Learning:** The integration of the physical world with the digital domain through a combination of different types of resources and activities with a range of learning technologies in and out the traditional classroom, where learners can interact and build ideas by mixing synchronous and asynchronous instruction based on the Internet and computer technology for full-time students.

**Higher Education:** An educational level that follows the completion of a school providing secondary education, such as a high school or secondary school.

**Learning Management System (LMS):** A software application or Web-based technology that enables the management and delivery of learning content and resources to students. It may also provide students with the ability to use interactive features. Most LMS systems are web-based to facilitate 'anytime, anywhere' access to learning content and administration.

**Learning Content Management System (LCMS):** A software application and multi-user environment where learning developers may create, store, reuse, manage and deliver digital learning content. This content can include media files, assessment items, simulations, text, graphics and other objects that facilitate the organisation of content from authoring tools and presentation of this content to students via the LMS.

**Virtual Classroom:** A special applications of computer and network technologies to the task of education using the Internet or an intranet. It is considered a learning environment created in the virtual space located within a computer-mediated communication system and all activities and interactions take place through the computer instead of face-to-face, where time, space or both separate teachers and students. It may involve a lot of overlapping scopes of interaction between the lecturer and the students, for example, lectures, meetings, presentations, audio and video conferencing, application sharing, shared whiteboards, quizzes and instant messaging, through course management applications and multimedia resources.

**Smart/Interactive Classroom:** An integrated classroom including smart education technologies in the traditional classroom equipped with advanced telecommunication networks, and other technological tools such as whiteboards, computers, data shows, document cameras, cables and wiring for laptop use.

## The Blended Learning Environment Instrument

For each statement, please select which best represents your answer.

### Demographic Data

1. Please choose only one of the following:

- Female
- Male

2. At present, I am a full-time student at:

- King Saud University
- King Fahd University
- King Abdul Aziz University
- Imam Mohammad Ibn Saud Islamic University
- King Faisal University
- Umm Al-Qura University
- King Khalid University
- Princess Norah University
- King Abdullah University of Science and Technology
- Alkharj University
- Prince Sultan University
- Prince Fahd bin Sultan University
- Prince Mohammad bin Fahd University
- The National Centre for E-learning and Distance Learning
- Other (please specify) .....

3. My current educational level is:

- Undergraduate student
- Master's student
- PhD student

4. My major/specialty is: .....



5. Have you studied any course in a blended learning environment, using learning technologies along with traditional learning?

- Yes
- No

6. Number of courses passed in blended learning: .....

Access	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. At the beginning of the semester, I can decide which courses I want to enrol in.					
2. The flexibility of blended learning allows me to explore my own areas of interest.					
3. The flexibility of blended learning through the LMS allows me to meet my learning goals.					
4. I can access the learning management system (LMS) anytime from anywhere.					
5. Electronic course contents are as readily available on the LMS outside the classroom as within the classroom.					
Comments:					

Through the LMS I can... (Please choose all that apply)	
6. Access electronic courses content	
7. Write exams	
8. Send/receive e-mail to/from lecturers and students	
9. Participate in online forums/chat rooms	
10. Participate in seminars	
11. Access learning activities on the learning management system (LMS) in class	
12. Communicate with course lecturers	
13. Communicate electronically with other students enrolled in the same course	
14. Submit assignments	
15. Access course timetables	
16. Participate in evaluation	
17. View the final results	
18. Attend some lectures virtually	
19. Register/enrol in courses and modules	
20. Receive registration notifications	
21. Cancel/delete the courses that I don't want to register for or enrol in	
22. View details concerning the results	
23. Obtain academic transcripts	
24. Modify/edit/change my personal information (address, telephone/mobile numbers, e-mail, etc.)	
25. Access information on funding and tuition fees	
26. Pay tuition fees	

Other:

Interaction	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
27. The mode of blended learning enables me to interact with other students and lecturers asynchronously (e.g. e-mails).					
28. The mode of blended learning enables me to interact with other students and lecturers synchronously (e.g. Webchat).					
29. In the blended learning environment, I feel more comfortable asking the lecturer about things I do not understand.					
30. In the blended learning environment, I feel more comfortable asking other students about things I do not understand.					
31. In the blended learning mode, the lecturers respond promptly to my questions.					
32. In the blended learning mode, other students respond promptly to my questions.					
33. I was supported by positive attitudes from my peers to enrol in the modules provided in the blended learning mode.					
34. In the blended learning environment, I regularly participate in self-evaluations.					
35. In the blended learning environment, it is easy to organise a group project.					
Comments:					

Response	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
36. I could learn more in a blended learning environment.					
37. Students' selection of a university will be based on the technologies it provides.					
38. I feel a sense of satisfaction about the blended learning environment.					
39. I felt a sense of achievement in a blended learning environment.					
40. I enjoy learning in a blended learning environment.					
41. The blended learning environment held my interest throughout the course.					
42. The LMS addressed the negative aspects of traditional education.					
43. There are some difficulties involved in using the LMS.					

44. In a blended learning environment, I feel a sense of boredom towards the end of my course of study.					
Comments:					
Results	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
45. In a blended learning environment, the learning objectives of the modules are clearly stated in the LMS as in the classroom					
46. In a blended learning environment, activities are planned carefully					
47. The module content in blended learning is appropriate for delivery both on the LMS and in the classroom					
48. On the LMS, there is a logical sequence in the module content					
49. The electronic content shows evidence of originality and creativity in the visual design and layout					
50. On the LMS, the links related to the electronic content are logical and clearly visible					
51. I can clearly and completely follow the subject of each lecture on the LMS					
52. The structure of the module content on the LMS keeps me focused on what should be learned					
53. Online tests on the LMS enhance my learning process					
54. The graphics used in the electronic content are appropriate					
55. The colours used in the electronic content are appropriate					
56. The use of multimedia materials (e.g. graphics, sound, animation and video) effectively contributes to make the electronic content more interesting					
57. The 'Help' system in the electronic content is active and effective					
58. The blended learning approach and traditional classroom approach are complementary					
59. Using LMS has a positive impact on the learning environment					
60. The LMS provides various, easy and attractive tools to learn					
61. Use of education technologies in the classroom shows creativity in the visual design and layout					
Comments:					

Infrastructure	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
62. To achieve the academic objectives, there is a wireless network available in most of the university buildings					
63. At the university in the labs and library, I can access the Internet through a wireless network					
64. At the university, Internet access is available in all classrooms					
65. At the university, there are interactive classrooms					
66. The technical support services section in the university effectively manages and solves requests to deal with the technical problems					
67. The technical support services section at the university responds quickly					
68. If the lecture cannot be conducted on time or in the scheduled classroom, for any reason, it can be conducted by the lecturer and attended by the students through virtual classes					
69. In the blended learning environment, there are some problems related to the electronic content					
70. In the blended learning environment, there are some problems related to the availability of technological equipment at the university					
71. In the blended learning environment, there are some problems related to the availability of technological equipment outside the university					
72. In the blended learning environment, there are some problems related to software and applications					
73. In the blended learning environment, there are some problems related to training					
74. In the blended learning environment, there are some problems related to the reliability of communication					
75. In the blended learning environment, there are some problems related to the reliability of communication outside the university					
Comments:					

At the university, the interactive classrooms contain... (Please choose all that apply)	
76. Computer	
77. Sound and video systems	
78. SMART board	
79. E-podium	
80. SMART document camera	
Other:	

- Additional Comments:

Thank you for completing this survey.

**APPENDIX B:**  
**Survey for Saudi Arabian University Staff and Higher Education Experts**

As a higher education staff member or expert working at a Saudi Arabian university, you have received this survey on 'Encouraging Effective Blended Learning in Higher Education in The Kingdom of Saudi Arabia'. The survey was designed to gather the views of the Saudi Arabian university staff and higher education experts to assess and identify the current status of blended learning in higher education in the Kingdom of Saudi Arabia and gain a picture of satisfaction with using education technology with traditional learning.

To help me in my data collection, please take a few minutes to fill out the electronic survey, which is available in both English and Arabic. The survey will take approximately 30 minutes to complete. Please feel free to circulate the survey, as you deem necessary to ensure that all relevant perspectives are represented.

I would like to thank you in advance for your participation in this research.

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,  
Areej Attiyah Aljahni  
Faculty of Advanced Technology  
University of Glamorgan  
Cardiff, UK

aaljahni@glam.ac.uk

**The following definitions are used in the survey:**

**Blended Learning:** The integration of the physical world with the digital domain through a combination of different types of resources and activities with a range of learning technologies in and out the traditional classroom, where learners can interact and build ideas by mixing synchronous and asynchronous instruction based on the Internet and computer technology for full-time students.

**Higher Education:** An educational level that follows the completion of a school providing secondary education, such as a high school or secondary school.

**Learning Management System (LMS):** A software application or Web-based technology that enables the management and delivery of learning content and resources to students. It may also provide students with the ability to use interactive features. Most LMS systems are web-based to facilitate 'anytime, anywhere' access to learning content and administration.

**Learning Content Management System (LCMS):** A software application and multi-user environment where learning developers may create, store, reuse, manage and deliver digital learning content. This content can include media files, assessment items, simulations, text, graphics and other objects that facilitate the organisation of content from authoring tools and presentation of this content to students via the LMS.

**Virtual Classroom:** A special applications of computer and network technologies to the task of education using the Internet or an intranet. It is considered a learning environment created in the virtual space located within a computer-mediated communication system and all activities and interactions take place through the computer instead of face-to-face, where teachers and students are separated by time, space or both. It may involve a lot of overlapping scopes of interaction between the lecturer and the students, for example, lectures, meetings, presentations, audio and video conferencing, application sharing, shared whiteboards, quizzes and instant messaging, through course management applications and multimedia resources.

**Smart/Interactive Classroom:** An integrated classroom including smart education technologies in the traditional classroom equipped with advanced telecommunication networks, and other technological tools such as whiteboards, computers, data shows, document cameras, cables and wiring for laptop use.



**Please read each question carefully and select or enter the appropriate answer.**

**For each statement, please select the option that best represents your answer.**

**Demographic Data**

1. Please choose only one of the following:

- Female
- Male

2. I currently work at:

- King Saud University
- King Fahd University
- King Abdul Aziz University
- Imam Mohammad Ibn Saud Islamic University
- King Faisal University
- Umm Al-Qura University
- King Khalid University
- Princess Norah University
- King Abdullah University of Science and Technology
- Alkharj University
- Prince Sultan University
- Prince Fahd bin Sultan University
- Prince Mohammad bin Fahd University
- The National Centre for E-learning and Distance Learning
- Other (please specify) .....

3. My current occupation is:

- University president
- Dean
- Head of department
- Lecturer
- Other:

4. Academic level:

- Professor
- Principal lecturer
- Senior lecturer
- Lecturer
- Other:

5. Years of Experience

6. Have you ever used blended learning to teach full-time students?

- Yes

- No

7. I have been teaching full-time students through blended learning for

- 5 years. 6 - 10 years

The Blended Learning Environment	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. In the future, students' selection of a university will be based on the technologies it provides					
2. In the future, staff's selection of a university to join will be based on the technologies it provides					
3. The use of learning technologies, along with the traditional method, has a positive impact on learning and teaching process					
4. The utilisation of education technology increases the efficiency of traditional learning					
5. Blended learning is better than traditional learning alone					
6. Utilising education technology enhances traditional learning and it is becoming increasingly essential in my classroom					
7. Using the Internet during lectures improves traditional learning					
8. Using education technologies during lectures improves traditional learning					
9. By using education technologies, my teaching skills have improved					
10. Applying education technologies along with traditional learning saves time					
11. If a lecture cannot be conducted on time or in the scheduled classroom, for any reason, it can be conducted by the lecturer and attended by the students through virtual classes					
12. During lectures, using education technologies along with traditional learning is indispensable					
13. At the university, there are particular objectives and strategies used to activate blended learning					
14. There are ethical motivations for faculty members to use education technology.					
15. There are financial incentives for faculty members to use education technology					
Comments:					

The following are necessary elements to establish a perfectly blended learning environment in higher education. Please choose the appropriate response for each item according to the current status at your university.	Strongly Available	Available	Not Available
16. The human element (skills related to the teacher and student).			
17. Technical element (the infrastructure of e-learning).			
18. Administrative element (setting goals and strategies).			
19. Social element (the culture of the educational community).			
20. Economic element (the budget and financial incentives).			
Comments:			
Through the learning content management system (LCMS) and learning management system (LMS), I can... (Please choose all that apply)			
21. Provide the course's content to users electronically			

22. Participate in seminars	
23. Receive assignments	
24. Manage staff	
25. Manage students	
26. Manage courses and modules	
27. Send messages and notifications to staff	
28. Sit exams and do evaluations	
29. Asynchronous online teaching	
30. Teach students synchronously, both with the classroom and online	
31. Get a list of enrolled students in courses and modules	
32. Post the mid-term and final result	
33. Print course timetables	
Other:	

Through the learning content management system (LCMS), I can... (Please choose all that apply)

34. Create and publish web learning documents	
35. Upload prepared files	
36. Reuse content	
37. Manage student reports	
38. Create exam questions	
39. Create a database specifically for the college, faculty members and students	
40. Exam administration	
Other:	

I can create the following type(s) of digital educational content (please choose all that apply):

41. Audio clips	
42. Video clips	
43. Flash animation	
44. HTML docs	
Other:	

Through the learning management system (LMS), I can provide the following course information (please choose all that apply):

45. Course description	
46. Course requirements	
47. Course dates	
48. Course activities	
Other:	

Through the learning management system (LMS), I can communicate with other university members and students via (please choose all that apply):	
49. Internal messaging and emails	
50. Chat rooms	
51. University online forums	
52. Virtual classrooms	
Other:	

The learning management system (LMS) allows me to do testing and assessment, where I can ... (please choose all that apply)	
53. Select question types – multiple choice, numerical, matching, ordering	
54. Generate question pools for reuse	
55. Create surveys	
56. Report and analyse results	
Other:	

Through my PC I can use the learning management system (LMS) to ... (please choose all that apply)	
57. List selected courses	
58. View a listing of selected groups	
59. Create a personal profile	
60. Write personal notes	
61. Follow internal university news	
62. View the calendar	
63. Modify/edit/change my personal information (address, telephone/mobile numbers, mail, etc.)	
64. Set office hours	
Other:	

Item	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
65. Through the learning management system, I can get feedback from students					
66. The learning management system supports and enhances full-time students' ability to learn outside the classroom					
Comments:					

Item	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

67. To achieve the learning objectives, the university provides wired Internet connections on campus					
68. The technical support services sections at the university effectively receive and resolve requests to deal with technical problems					
69. The response of the technical support services section at the university is rapid.					
70. The learning content management system (LCMS) and learning management system (LMS) can be accessed at any time from anywhere					
71. At the university, there are smart/interactive classrooms					
72. There is a special budget allocated by the university to activate blended learning.					
Comments:					

To achieve the learning objectives, the university provides wired Internet connection in (please choose all that apply):	
73. Classrooms	
74. Computer labs	
75. Learning resource centres	
Other:	

At the university, the smart/interactive classrooms contain (please choose all that apply):	
76. Computers	
77. Sound and video systems	
78. SMART Boards	
79. SMART Document Cameras	
80. Data show projector	
81. E-Podium	
Other:	

To activate blended learning with full-time students, I use certain tools such as (please choose all that apply):	
82. Computers	
83. Mobiles – to provide students with timetables, lecture times or lecture content	
84. SMART Boards	
85. SMART document cameras	
86. Data show projectors	
Other:	

To activate blended learning with full-time students, I use technologies such as (please choose all that apply):	
87. Digital libraries	
88. Text messages (SMS)	
89. Online live broadcasts	

90. Online recorded lectures	
91. Social networks such as YouTube, Facebook, Twitter	
Other:	

In the blended learning environment, there are some problems related to:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
92. The availability of technological equipment					
93. Communication reliability					
94. Electronic content					
95. Software and applications					
96. Training					
Comments:					

**Please provide your name and e-mail address so that you may be contacted regarding this survey.**

- Name:
- E-mail:

Thank you for completing this survey.