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Experience in Some Universities in Saudi Arabia  
from Male Students' Perceptions*

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**Evaluating the Effectiveness of the E-learning Experience in Some  
Universities in Saudi Arabia from Male Students' Perceptions**

**By**

**Abdullah Algahtani**

**A Thesis Submitted for the Degree of Doctor of Philosophy**

**School of Education  
University of Durham**

**2011**

## **ABSTRACT**

This study applies social science methodology to the innovation of e-learning so that decision makers and other stakeholders can assess aspects of its effectiveness, to provide a more secure base for action. In this study, e-learning's effectiveness was evaluated at two universities in Saudi Arabia, through male learners' perceptions. Some account was taken of variables to assess statistically significant differences in their views. The data was collected by mixed methods: using a questionnaire from a sample of 300 learners and a focus group interview attended, later, by 21 learners.

The findings showed that e-learners believe that they are able to learn autonomously using all features made available by the technology. They reported that they were motivated by the interactivity of e-learning and pursued their courses with intensity and success. There was positive agreement in all four dimensions considered by the research. Significant variables within this positive rating were previous e-learning experience and ICT skills. The study also collected learners' views about the positives and negatives of e-learning, its requirements and barriers, as well as learners' suggestions for the development of e-learning. Learners appreciated the opportunities offered by e-learning and the way it supported their studies, facilitating communication and accommodating their learning needs and circumstances. They recognised that it helped to meet an increased demand for learning. On the other hand, they noted some hazards to physical and social health and some confusion arising from the diversity of information accessible through ICT. They felt improvements could be made by planning, training and by specialized personnel. Most of the barriers they noted arose from infrastructural weaknesses and lack of acceptance of e-learning. Respondents said they were aware of financial constraints and of language barriers. Universities, working closely with communities and the private sector, could address many of these identified issues in products and infrastructure. This study concludes with some recommendations as well as suggestions for future research.



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## DECLARATION

**This thesis is as a result of my research and has not be been submitted for any other degree in any other university.**

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## **DEDICATION**

**To those who paid the price for my involvement in postgraduate studies  
my beloved mother, Sheikah  
my lovely wife, Mody  
my brothers and sisters  
my children, Faleh, Fahad, Wajdan, Faisal, Wala, Weam.**

## **Preface**

E-learning is perhaps the most important development in the educational world today. If e-learning is a new departure in education, equal to those that guided and constrained traditional methods of delivery, then decision makers, educators, learners and the wider society can and should step beyond simple opinions about e-learning's usefulness and base their judgements on systematic assessments of its effectiveness.

This research puts us in a position to determine to what extent e-learning is effective from learners' points of view. The methodology and tools provided by Social Science are adopted by this study. E-learners' perceptions of the flexibility and interactivity of e-learning are used to gauge its effectiveness leading to rational considerations of the positives and negatives of e-learning and to recognition of its strengths, weaknesses, barriers and requirements. Such a procedure is a necessary enabling factor for the further development of this pedagogical method.

The resulting argument shows that further research to support this claim is possible and achievable because all learners, regardless of their culture or stage of education have their own perceptions of their learning. Such perceptions provide an on-going gauge of e-learning's effectiveness that can be of use to planners, producers, programmers, administrators and funders of educational provision at local, national and international levels.

E-learning is increasingly used to respond to the increasing demand for education. This study relates existing models and frameworks of e-learning by simplifying, condensing and classifying the characteristics of e-learning identified by previous research, and organising them into the key concepts of flexibility and interactivity in a framework that specified whether this was with the content, instructors or other learners. The study indicates that a

comprehensive survey of the effectiveness of e-learning requires the addition of a new category: autonomy. This concept is, therefore, introduced to complete the framework. With this methodology, decision makers, educators, learners and the wider society can evaluate the effectiveness of e-learning in other contexts.

The work is divided into six chapters. The first two give the background to the research. Chapter One offers the academic rationale of the study and the background, to date, of e-learning with its roots in distance learning and discusses related research including the models and definitions of evaluation. Chapter Three describes the methodology and Chapter Four the presentation which is discussed in Chapter Five. Chapter Six presents the conclusions and recommendations arising from the research and suggests further studies.

**Chapter 1. Background of the study**

**Introduction:**

**1.1 Location, population and area**

**1.2 Culture and Social life**

**1.3 Economy and geography**

**1.4 Information and communications technology**

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### **Introduction:**

Between the end of last century and the beginning of this, the world has witnessed many developments and changes, led by the information, communication and technology (ICT) revolution. This has been characterized by rapid development and which continues to influence the smallest detail of our lives. Coinciding with this revolution are explosions of population and of knowledge. Indeed, knowledge has increased beyond learners' capacities to attend to all relevant kinds of information. These developments challenge education and in particular the problems of increasing learner demand and the shortage of instructors, especially in higher education. The impact of these conditions necessitates research about options in learning and requires educational institutions to develop efficient and effective systems that can meet the needs of communities driven to absorb tremendous scientific and technological progress (Amer, 2007).

Therefore, educational communities must remain viable for growth in the midst of global market competition and must benefit from the ICT revolution by employing it to respond to contemporary pressures. Accordingly, new ways of teaching and learning have begun to emerge globally, the most important of which is e-learning. E-learning has become a reality which it is impossible to ignore, especially for workers in the educational sector. The need to know about its concerns, related concepts, skills, tools and so forth, drive this development forward. It also seems reasonable to expect, that researchers will rate the computer as the greatest invention in human history in terms of facilitating global communication. New ICT terminology now dominates the world, including e-commerce, e-government and e-learning. Widespread use of ICT has led to new communication channels and accessible information, while the internet has changed our learning methods, (Ryder and Wilson, 1996). Indeed, the revolutionary thrust of ICT is derived from the alliance of the two types of rapidly developing technology, the first being personal

## Chapter One: Background to the Study

computer (PC) technology, making small, affordable computers, including devices such as iPads and smart phones; and the second being directly wired and wireless networks, providing exchange between devices whether nearby or afar (Alfahad and Almosa, 2002). Thus, the internet offers new and interesting opportunities for learning (Alsalem, 2004), supported by the delivery and use of multimedia elements through new kinds of connected devices.

These multimedia and interactive modes of use make ICT the most important means of communication in teaching and learning (Abdulaziz, 2008). Computers' large capacity for storage, rapid retrieval of information, ease of access, and interactivity for learners provide inspiration and feedback. Immediate benefits include high motivation and learning that is more enjoyable, with a choice of place and time, conveying the idea of continuity and lifelong learning (Almoberek, 2001). Significant changes in education follow from these features and benefits of ICT, initiating a gradual shift in the educational paradigm, from traditional delivery to more student-centered and autonomous learning, with the teacher as facilitator and guide amongst a range of sources of knowledge.

The theory and application of ICT attracts systematic methods through inter-related theories in technology, psychology and education to develop its bases, principles, and applications for higher education. So now universities can be open, virtual, and electronic by using the internet and can consider it as the main tool for communication with learners (Hamdi, 2003), principally by providing an interactive environment between the learners and the educational material (Alkateeb, 2003). E-learning is not only a technological issue therefore, but also a philosophical one. How ICT can serve teaching and learning is a significant and timely issue. E-learning was rated the fastest growing industry in the field of educational resource production. Urdan and Weggen (2000) said it was expected that the

## Chapter One: Background to the Study

market would quadruple each year. Since then, attention to e-learning has increased globally. The international community meets these challenges by preparing their citizens for a technological era, where reforms based on ICT attract political and financial support. For example, in the UK in 2003, more than 3200 schools were linked by the internet. After that, in 2004, the Department for Education and Skills published an ambitious strategy as “E-Strategy Harnessing Technology: Transforming learning and children’s services”, outlining a requirement to use digital and interactive technologies to individualize all areas of education and child welfare (Department for Education (DfE), 2008). Most recently, the UK invested £500 million to deliver the required technology to the primary schools (Holmes and Gardner, 2006).

The production of materials and software for e-learning in education and training by schools and universities now increases daily. The internet is acceptable in workplaces for both learning and training, justifying the assumption that e-learning is a key part of the future of learning. This trend is evidenced in Saudi Arabia, one of the countries that adopted the internet for university and college use in the 1990s (Alhajeri, 2005). The use of ICT has expanded, culminating in the publication of the National Plan for ICT in 2006, which cited the fourth goal of optimizing the use of ICT in education and training at all educational levels (Ministry of Communications and Information Technology (MOCIT), 2009). Accordingly Saudi Arabian universities have responded and accelerated the use of e-learning by developing their infrastructure for its application. Significantly for this study, the earliest innovations were at the King Saud University and Imam Muhammad Bin Saud University.

Nevertheless, e-learning is still in its early stages of use worldwide, particularly in the Kingdom of Saudi Arabia (KSA), where some of the difficulties and challenges of implementing e-learning are still being addressed. This research will evaluate the

## **Chapter One: Background to the Study**

effectiveness of the e-learning experience in these universities from male students' perceptions, examining the strengths, weaknesses, problems and difficulties, and seeking solutions from their viewpoints to ensure efficiency and effectiveness.

The next section will focus on the site of this inquiry which is Saudi Arabia where the recent introduction of e-learning to its cultural and social life, against the backdrop of its economy and geography, information and communications technology, and education make it an ideal site present study. Information from the two universities where the study was carried out is sources of evidence. This will incorporate information about the National Plan for Information and Communications Technology and the National E-learning and Distance Learning Centre. Finally, the discussion will turn to the two pieces of software used in e-learning in these universities. All of these background issues will be related to the present study. Consideration of the importance of the study will conclude the chapter.

### **1.1 Location, population and area**

Located in the Arabian Peninsula, contemporary Saudi Arabia was founded in 1926 and fully united in its current format in 1932. Its strategic location in the northern hemisphere is between the three great continents Asia, Africa and Europe. Thus, it has been occupied by diverse civilizations and is a sacred site for many (Alothaimen, 2005).

Across its 865,000 square miles, covering approximately 80% of the Arabian Peninsula, it borders Iraq, Jordan, and Kuwait to the north, United Arab Emirates, Qatar and Bahrain to the east, the sultanate of Oman and Yemen to the south, and the Red Sea to the west Figure(1.1) (Abualieah, 2003). The nation state is roughly equal to the size of Western Europe, or about one third of the United States and it is the fourteenth country in the world in terms of expanse.

Figure 1.1: a map of Saudi Arabia



In 2008, the population of this vast expanse was about 24.8 million, of which Saudis comprised 73% (18.2 million) of the total, whilst the non-Saudi population was 27% of the total (6.69 million) (Ministry of Planning (MOP), 2009).

The foregoing facts and figures indicate the intensity of demand for e-learning where distances are great and the potential student body is large and diverse. Hence the government of Saudi Arabia has seen fit to manage the development of e-learning and this is a theme of this study. Thus ministerial provision for e-learning is appropriate to the main argument of the thesis in terms of evaluating its effectiveness. Having considered the location and the demography of Saudi Arabia, aspects of its culture and social life will be mentioned in so far as they relate to the research.

### 1.2 Culture and social life

In view of the impact of a nation's culture and social life on its educational provision, some information is offered here.

Saudi Arabia has a particular character because it was the site of Islam and the country of the two holy mosques, one of which is in Makkah, faced by Muslims, all around the world, five times a day to perform their prayers. In addition, all Muslims have to travel to Makkah on a pilgrimage once in their life time. Nevertheless Saudi culture has been strengthened and developed within the framework of the legislation and teachings of Islam which is the official religion of the country, framing all aspects of life, including the judiciary and regulation of family relations. English is a minority language for optional use in the health sector, business and international affairs (Ministry of Foreign Affairs (MOFA), 2009) but Arabic is the official language of the country and the one in everyday regular use.

In relation to the methodology of this study, a careful process of translation and checking was needed for each stage of the questionnaire and focus group interview. Having seen the relevance of language and culture to this study, economic and geographical issues will be considered in the following section.

### 1.3 Economy and geography

Economy and geography have a significant impact on life chances and attitudes to education. A brief consideration of these aspects of life in Saudi Arabia is offered here.

In 1938 oil was discovered in Saudi Arabia, where it had a major impact on the development of the country in all respects and basically helped to launch a programme of development and modernization, which, though delayed by World War 2, returned with intensity in 1946. Indeed, oil has contributed to the prosperity of the Saudi economy and helped forge trade deals with the international community to the extent that oil and the

## Chapter One: Background to the Study

industries based on it (petrochemicals) are considered the main economic resource of Saudi Arabia. Additionally, there are a variety of minerals such as gold, silver, copper, zinc, lead, iron, aluminium, phosphate and coal. The structure of industrial production in Saudi Arabia is divided into two basic industries: heavy, depending mostly on oil to provide raw materials, and manufacturing and light, composed of a diverse range of industries such as food, building materials, and the chemical industry. This strong economy has been used to sustain technological innovation.

The effects of many obstacles such as drought, lack of local labour, absence of rivers and permanent watercourses, extreme climatic variation and great distances from one region to another have been modified by technology. Consequently the country has moved from the stage of importing most of its food to self-sufficiency (Ministry of Information (MOI), 2009). The country is divided administratively, into 13 provinces (Makkah, Almadinah, Arriyadh, Albaha, Jazan, Asir, Najran, Asharqiyah, Alqassim, Al hodod Ashamaliyah, Hail, Tabuk and Aljouf) (Abualieah, 2003). The following figure (1.2) shows the locations of these provinces on the map:

Figure 1.2: the thirteen provinces in Saudi Arabia



(MOP, 2009).

The foregoing description of the economy and geography of Saudi Arabia conveys at once its need for e-learning and the importance of its capacity to develop it. The country makes use of various forms of technology for all its products. The universities, therefore, are called upon to prepare learners to take their place in the development of its resources. These same resources provide the financial fluidity to undertake educational innovation which, particularly in the case of e-learning, is an enabling factor for students, across its thirteen varied provinces, to pursue their studies and complete course requirements whatever environmental impediments they may meet.

The foregoing section considered the economy and geography of Saudi Arabia in relation to e-learning and suggested that this is a vital innovation for which the country is well prepared. The following section will consider the development of ICT in the kingdom.

### 1.4 Information and communications technology

The following section will help to situate the study in the history of ICT development by describing the status of computer technology in Saudi Arabia, to the time of writing.

Saudi Arabia recently experienced a huge boom in the sector of information and communications technology, introducing and developing many activities and skills and stimulating other sectors. Experts have estimated the value of the information and communications technology sector in Saudi Arabia in 2010 as approximately 120 billion riyals (£20.16 billion), which will make it occupy the second rank in revenue to oil. For example, the number of mobile phones may be taken as an indicator of the transition to information society and the number of participants in mobile phone services reached 10 million in 2008. The internet was introduced to Saudi Arabia for the first time in 1992 when educational and medical institutions and research were first permitted to access the internet. Then the internet was officially opened to the country in 1997 by a ministerial decree, and allowed to the public in 1999 (Ministry of Information and Communications Technology (MOCIT), 2008).

Saudi Arabia is considered the world's fastest growing internet market. The number of internet users jumped from 200,000 users in 2000 to 4,800,000 users in 2006, which means that approximately 20% of the population was using the internet. According to recent statistics, the Saudi Telecom Company (STC) numbered their internet users, 18.5 million, or 64% of the population. So it is likely that number is increasing steadily year after year. There are also some companies that provide internet services in Saudi Arabia by TV cable or through Wi-Fi (MOCIT, 2008).

The most important current and future plan for information and communications technology projects in Saudi Arabia is the National Plan for Information and Communications Technology (more information about which will follow in section 1.6).

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This is one of the most important national projects for the development and establishment of a local ICT industry. The country has also adopted other projects to achieve the same goal, for example, it has introduced e-government and e-learning and e-health in the government sector and there is a strong trend of e-commerce in the private sector. This industry is regulated by the City of Information and Communications Technology in Riyadh, aiming to make Saudi a home for the knowledge industry by investments worth 6.2 billion riyals (£1.4 billion) (MOCIT, 2009; Ministry of Education (MOE), 2010).

This implies that the development of ICT in Saudi enjoys not only financial support from the government, but it is fostered and encouraged in a strategic manner. Thus this study is situated within a climate of informed opinion and national planning and it contributes to a broad spectrum of debate about the effectiveness of e-learning.

### **1.5 Education in Saudi Arabia**

The coming section describes the structure of public and higher education in Saudi Arabia so that this informs the study's consideration of higher education.

When the nation of Saudi Arabia came into being, there were only five private schools. These schools, in spite of their limitations, are considered the starting point for the modern educational movement. In 1925, a Directorate of Public Education was established as the first attempt to organise education (Ministry of Education (MOE), 2008; Alsenbul, 1996; Alsaloum, 1991). Education policy in the Saudi Arabia developed from 1929, when the Shura Council ratified the original system for schooling, and the parameters of educational policy were determined gradually until another education policy document was issued in 1970, comprising 9 sections and 236 items. The most important items in this document were that the policy for education in Saudi Arabia was derived from Islam and provisions were made for students to contribute to the development and evolution of the society in which they lived. In keeping with Islam, the policy decreed that government sponsored

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education should be available to all, (Alhageel, 1996; Alsenbul 1996, Alsaloum, 1991; MOE, 2008). Later, the public educational system consisted of primary, intermediate and secondary schooling totalling twelve years of general education. At the secondary level learning was divided into three: Islamic studies, science, and administrative studies, before learners moved on to university.

In 2009, the number of students in various stages of education, male and female was more than five million students; there were about 468 thousand teachers in 33.5 thousand schools. The number of male students in the academic year 2009 was over 2,510,489. 217,613 teachers taught in 15,066 schools. The number of female students was 2,438,007 and 250,236 teachers taught in the 18,403 schools. Four bodies have the oversight of public and private education at all levels of education in Saudi Arabia: the Ministry of Education, Technical and Vocational Training Corporation, Ministry of Higher Education and the military colleges for the armed forces (Alsenbul, 1996; Alsaloum, 1991; MOE, 2008).

The general objectives of education policy in Saudi Arabia emphasize the introduction of the latest developments of science and technology. Computers were introduced as a separate subject in secondary schools in 2006 for one class per week. This class increased to two classes in 2007. The Ministry of Education has taken steps towards e-learning by undertaking a number of projects including: conversion of school libraries to learning resource centres to accommodate printed and non-printed sources of information, including information and communication technologies and their integration in the process of teaching and learning, so that the centres were equipped with the internet and other networks used by teachers and students (Algahtani, 2007). Individual efforts of some schools and some teachers applied e-learning on a small scale and, later, a limited number of private and public schools started to adopt e-learning (Ministry of Education, 2008).

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In 2008, the King Abdullah Public Education Development Project focused on providing educational opportunities for all individuals throughout the society despite the geographical expanse of the country and the steady increase in population. As a result, education in Saudi Arabia ensures that students are prepared to deal with the present era of global reality in a positive way with twentieth first century skills. The project, costing nine billion riyals (£1.51billion), serves many objectives, including, improving the educational environment and preparing it to integrate ICT into education (Ministry of Education (MOE), 2008).

The strategic planning undertaken by the Ministry directs the impact of ICT on higher education. Thus Saudi Arabian students are prepared for their specialization during secondary school years and are taught to use ICT. As for the respondents to this study, these were significant variables, especially their previous experiences of e-learning. Details of how permission for this research was obtained for this inquiry are shown in the methodology and in various appendices. Thus, in the context of Saudi Arabia, this study is overseen by the Ministry of Higher Education.

The foregoing section surveyed the preparation of the education system and contemporary learners for participation in ICT. The following section will consider the organisation of higher education in Saudi Arabia.

### **1.5.1 Higher education in Saudi Arabia**

This section offers a brief survey of higher education in Saudi Arabia in relation to the present study. The Ministry of Higher Education was established in 1975 to undertake the functions of management and planning in public and private institutions of higher education, and supervise the implementation of educational policy in higher education for Saudi students at home and abroad. Higher education was developed with a similar policy to general education, based on the principals of Islam. Amongst the items of policy was the provision of opportunities for outstanding students to pursue their higher studies in science

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disciplines and play a positive role in the field of scientific research, contributing to global progress in the field of literature, science, and inventions by finding the right and appropriate solutions to the requirements of trends in advanced technology. Also listed as a policy item, was the translation of science and useful arts knowledge to the Arabic language and enabling the largest number of citizens to access knowledge and information. The policy included the implementation of training to the graduates who were in work.

The first university in Saudi Arabia, the King Saud University in Riyadh, was founded in 1957, and this was followed by the opening of other universities, comprising eight universities in 1998 and multiplying further in 2004/2005 by six newly established universities. Later still, in 2006, four more universities were established and a year later, in 2007, one university was added, in 2009 four new universities were established. Official statistics show that Saudi Arabia is experiencing a comprehensive revitalization in higher education with twenty-three public universities and 220 Colleges (Table 1.1, below), eight private universities and 20 community colleges. All universities are linked to the Ministry of Higher Education with independent administrative and academic bodies. In them, there are more than 702,000 students taught by 30,000 faculty members (Ministry of Higher Education (MOHE), 2009). Most of these universities can be found through their websites but further uses of technology vary from one institution to another.

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Table 1.1 Showing the names of public universities and the dates when they were founded

University	Founded	City	Website
King Saud University	1957	Riyadh	<a href="http://www.ksu.edu.sa">www.ksu.edu.sa</a>
Islamic University of Madinah	1961	Madinah	<a href="http://www.iu.edu.sa">www.iu.edu.sa</a>
King Abdulaziz University	1967	Jeddah	<a href="http://www.kau.edu.sa">www.kau.edu.sa</a>
Imam University	1974	Riyadh	<a href="http://www.imamu.edu.sa">www.imamu.edu.sa</a>
King Fahad University	1975	Dahran	<a href="http://www.kfupm.edu.sa">www.kfupm.edu.sa</a>
King Faisal University	1975	Hasa	<a href="http://www.kfu.edu.sa">www.kfu.edu.sa</a>
Umm Al Qura University	1979	Makkah	<a href="http://www.uqu.edu.sa">www.uqu.edu.sa</a>
King Khalid University	1998	Abha	<a href="http://www.kku.edu.sa">www.kku.edu.sa</a>
Taif University	2004	Taif	<a href="http://www.tu.edu.sa">www.tu.edu.sa</a>
Taibah University	2005	Madinah	<a href="http://www.iu.edu.sa">www.iu.edu.sa</a>
Qassim University	2005	Qassim	<a href="http://www.qu.edu.sa">www.qu.edu.sa</a>
Jouf University	2005	Jouf	<a href="http://www.ju.edu.sa">www.ju.edu.sa</a>
Jazan University	2005	Jazan	<a href="http://www.jasanu.edu.sa">www.jasanu.edu.sa</a>
University of King Saud for Health	2005	Riyadh	<a href="http://www.ksauhs.edu.sa">www.ksauhs.edu.sa</a>
University of Hail	2006	Hail	<a href="http://www.uoh.edu.sa">www.uoh.edu.sa</a>
Al-Baha University	2006	AL-baha	<a href="http://www.bu.edu.sa">www.bu.edu.sa</a>
Najran University	2006	Najran	<a href="http://www.nu.edu.sa">www.nu.edu.sa</a>
Tabuk University	2006	Tabuk	<a href="http://www.ut.edu.sa">www.ut.edu.sa</a>
Alhudod Alshamalia University	2007	Arar	<a href="http://www.nbu.edu.sa">www.nbu.edu.sa</a>
Dammam University	2009	Dammam	
Al-Kharj University	2009	Al-Kharj	
Al-Mujma University	2009	Al-Mujma	
Sugra University	2009	Sugra	

The ministry also sponsors Saudi students studying abroad, spread across several countries in various much-needed scientific fields. This number is estimated at 70,000 making Saudi Arabia fourth in rank of countries whose students study abroad. Nevertheless, the ministry supervises and coordinates scientific research and scientific chairs, scientific research institutes and centres, seminars and scientific conferences. Indeed, some Saudi universities have achieved an advanced level in the world universities' ranking (MOHE, 2009).

The beginnings of ICT were therefore established in numerous universities across Saudi Arabia and learners enrolled both in local universities and those abroad the capacity to gain information about each others' studies through the internet. Furthermore learners can communicate with each other at any time from any place and at their own convenience. A sensitive point in such development is a cultural reluctance in Saudi Arabia to encourage mixing between male and female learners. Provision is made for women's learning opportunities as outlined below.

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Education for women started later than provision for male students. Several girls' schools opened in 1959 and higher education began in 1969, when the first female college was established to meet the need for female teachers. One of the distinguishing marks of female education in Saudi Arabia is that women's education is segregated from elementary to university level as provided by items 9 and 153-156 in the education policy document stating that females have a right to learn, in decency, dignity and in appropriate ways in the light of Islam to become successful mothers and engage in suitable careers. The government was concerned to provide the necessary resources to accommodate all of them and to allow entry into all types of education without mixing male and female learners at any level of education except in nurseries and kindergartens (Alhageel, 1996).

Accordingly, the separation of female and male learners is one of the reasons that made the sample in this study include only males. This does not mean a male researcher cannot study female learners, but there are many difficulties, amongst them, the difficulty in obtaining permission to do so and the complication of indirect interviews with women. Moreover, as explained above education, for females has progressed more slowly than education for males, even in technological applications such as e-learning, because of trends towards innovating amongst male learners first, before generalizing advances to female learners. Further differences, as shown by some related studies, refer to parents' reservations about allowing their girls to use the internet (Alaugab, 2007).

ICT is used to assist the administration of higher education in Saudi Arabia at all levels including governmental. The highest authority is the Higher Education Council, which is in charge of education above the secondary level, and supervises and coordinates the institutions (except military education). This board ensures the common regulations of the universities. The Ministry of Higher Education supervises all universities and coordinates between the universities regarding admission of students, curriculum, research, and in order

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to prevent duplication and overlap. The council of this ministry is a body directly responsible for higher education, its policies and development and for achieving the goals of strategic plans for education in the Saudi Arabia, finding appropriate solutions to the problems and difficulties faced by universities. The Dean of each university sits on the Council of Higher Education and convenes the board of his/her own university. All such boards are attended by the university vice presidents, secretaries of the universities, and the General Secretary of the Council of Higher Education or his representatives. It is the responsibility of the dean of each university to administrate academic and financial issues, and supervise the implementation of the university system and its regulations according to the decisions of the Higher Education Council, and to represent the university at home and abroad (Ministry of Higher Education (MOHE), 2009). At every level, the administrative procedures of the universities are facilitated and enabled by ICT. Across geographical distances, between accessible times and to ensure gender inclusion, webcams and other interactive features of ICT are used to consult, conference, negotiate and implement learning organization and content. Indeed, amongst the key objectives of all of the above officials is to find suitable solutions for the challenges facing higher education.

### **The challenges facing higher education in Saudi Arabia**

The most recent statistical data in higher education in Saudi Arabia, at the time of writing, revealed some facts about higher education. This section outlines some of them, beginning with the most important.

There is

- continued growth of Saudi undergraduate students within the relevant age groups,
- increasing demand, in excess of the capacity of the institutions, for all kinds of higher education, putting steady pressure on them to accommodate all applicants,

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- lack of balance between the number of graduates from the theoretical and practical fields and inability to meet the needs and requirements of national development programs,
- wastage of educational personnel, both students and teachers,
- strain on the financing of higher education because education is free and sponsored by the government at all levels, and all university students have regular support payments (Algurney, 1999).

The role that e-learning might play in assisting Saudi Arabia to face such challenges is clear. It may assist to broaden the base of current higher education through the introduction of e-learning to enhance students' opportunities and to achieve greater inclusion, to meet the anticipated increase in the numbers of applicants to higher education and to decrease the raising cost of higher education whilst improving its quality. However, the main dilemma remains: uncertainty about its effectiveness and its advantages and disadvantages.

Having discussed the arrangements and the challenges facing Saudi Arabian universities in general, the particular setting of the study will be described.

### **1.5.2 Universities where the study was implemented**

We will illustrate here in detail the two universities where the study was carried out. Because the available time, finances, and human resources for the research did not allow a comprehensive survey of all universities, the researcher chose King Saud and Imam Universities. These were chosen because they were the forerunners of all the universities and King Saud was one of the first to use technology and introduced the internet early in 1992 (Alhajri, 2005). They therefore provide a context where the use of technology is more established.

### 1.5.2.1 King Saud University

In 1957, King Saud University was the first Saudi university to be formed, beginning with only two colleges: Arts and Science. Since then the student body has rapidly increased. The number of students for the academic year 2008 at the bachelor degree was 72,148 and the number of faculty members during the same year was 3,285. At the time of writing, the University had nineteen colleges: Colleges of Arts, Science, Engineering, Business, Languages and Translation, Applied Medical Science, Computer Science and Information Technology, Medicine, Nutritional Sciences and Agriculture, Pharmacology, Architecture and Planning, Dentistry, Nursing, Tourism and Archaeology, Applied Studies and Community Service, and Riyadh Community College. These colleges were grouped under eleven deanships; one of them is the Deanship of E-learning and Distance Learning (Ministry of Higher Education (MOHE), 2009).

The same document outlines the goals of King Saud University. They aim to provide high quality education, and produce innovative research, serve the community and contribute to building the knowledge economy through the creation of an environment that encourages creativity in learning and makes optimum use of technology. The university seeks to maintain an active partnership with local and global educational organisations. The following strategic objectives serve the goals of providing excellence in all areas, and distinction in specific areas, staffed by prominent academics to achieve quality and not quantity. The university aims to strengthen the capacity of graduates, build bridges of communication in a supportive learning environment for a sustainable future by ensuring flexibility and accountability and offering a supportive administrative organization (Ministry of Higher Education (MOHE), 2009).

### 1.5.2.1.1 Deanship of e-learning and distance learning at King Saud University

The deanship aims to achieve leadership in the development and diversification of teaching and learning methods through e-learning based on information and communication technology and to be a leader in knowledge dissemination facilitated by the latest information and communication technologies. It seeks to assist the faculty members and students to improve the quality of the learning process through investments in e-learning methods, thus allowing the learners to choose the place and the time to learn and helping faculty members to activate education through the provision of the content through information and communication technology. The deanship consists of three agencies which are: the Financial and Administrative Affairs Agency, the Technological Affairs Agency and the Deanship Agency. Further, there are two Departments of Administrative Affairs and Learning and Technologies Systems, as well as a number of centres and units. The tasks of the Deanship of E-learning and Distance Learning at King Saud University are the following:

- build up a strategic plan for e-learning programs at the university,
- create an environment suitable to promote the applications of e-learning,
- build up technical standards and regulations for the applications of e-learning at the university level,
- coordinate the colleges and university departments regarding the plans and programs of e-learning and distance education,
- provide technological support and human support for faculty members in the field of development of technological skills.

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- provide technological support and human support for faculty members in the development of e-courses and content,
- supervise the systems of e-learning and distance learning in coordination with the relevant authorities,
- strengthen cooperation with the relevant e-learning projects both internally and externally.

The strategic plan of the Deanship is to achieve its vision and objectives by

- developing the university's courses in electronic form,
- providing advice and technological support for the development of educational sites for faculty members,
- providing an environment to stimulate electronic communication between faculty members and students,
- developing the skills of faculty members to enable them to convert their courses to the electronic form,
- providing the environment and appropriate training to enable faculty members to carry out their tasks related to the evaluation of students and monitoring of results and deal effectively with the learning management system (LMS) at the university,
- creating rewards for excellence in e-learning for faculty members,
- working to create user guides to promote a culture of e-learning and increase the skills of faculty members and students in this area

(Deanship of E-learning at King Saud University, 2008).

### 1.5.2.2 Imam University

Imam University was established in 1974. In 2008, the number bachelor's degree students for the academic year were 36,016 and the total number of faculty members was 1,328.

At the time of writing, there were eleven colleges: Colleges of Shree'a, Arabic, Science, Economics and Administrative Sciences, Languages and Translation, Computer Science and Information Technology, Engineering, Medicine, the Islamic Foundation College and Dawa and Media College. All these colleges were grouped under nine deanships one of them is the Deanship of E-learning and Distance Learning (Ministry of Higher Education (MOHE), 2009).

The above document revealed that the objectives of the Imam University were to implement the educational policy to provide university education and postgraduate studies, to promote scientific research and to engage in authorship, translation and publication whilst serving the community within the scope of its capability.

#### 1.5.2.2.1 Deanship of E-learning and Distance Learning at Imam University

The Deanship aims to achieve the University's vision to transform teaching and learning to an advanced stage by introducing new technology, and its vision is to apply new features of ICT to teaching and learning to reach a wider range of learners; thus achieving the requirements of the market. Unlike the King Saud University, Imam University's deanship is composed two agencies: Academic Affairs Agency and the E-learning Agency. There are a number of departments such as Management of Academic Affairs, the Department of Cultural and Media Affairs, the Technological Affairs Department, the Department of Finance and Administration and a number of centres and units. The tasks of the E-learning and Distance Learning Deanship include the supervision of e-learning programs, the portal of the University and the educational broadcast channel of the University. The deanship has a strategic plan for the application of e-learning to reach excellence in the field in line with

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the trends and international experience (Deanship of E-learning at the University of Imam, 2008).

The deanships, as described above were the responsible bodies for authorising the present research. They facilitated the work by issuing documents to verify the research activities and supplying lists of e-learners required for the sample. For the sample of the study, they also provided the full support of the Statistical Department for the analysis of the questionnaire responses. This capacity to undertake this research is just one example of the benefits of the deanships as overall organizing bodies.

Having outlined the roles of the Deanships of E-learning in each university, the next section shows how the National Plan encompasses their work.

### **1.6 The National Information and Communications Technology Plan**

The Government of Saudi Arabia confirmed the need to shift to the information society, as an ambitious future for all the various bodies of the country, so that they may help to shape its content and participate in creating it. The implementation of information and communications technology in Saudi Arabia transforms the society into a digital economy to increase productivity with the aim of providing information and communications technology to all parts of the country by building an industry in this sector with the capacity to become one of the main sources of income to Saudi Arabia. The first Five-Year Plan for Information and Communications Technology in Saudi Arabia was approved in 2006 and aims to:

- raise the productivity and efficiency of all sectors, and disseminate government services and commercial, social and health care electronically, and to encourage tele-working through the optimum use of information and communications technology,

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- regulate the information and communications technology sector fairly, and attract investments so as to ensure the best infrastructure and technological information for users at affordable prices,
- build a strong and competitive information and communications technology industry locally and internationally, through research, innovation and development in all areas, cooperating nationally and internationally to generate a major source of income,
- use communications and information technology, optimally, in education and training at all levels.

These aims are set for gradual achievement through a five-year plan that has three specific objectives which are:

- to enable all members of society, in all parts of the country, to deal with information and communications technology effectively,
- to make optimal use of information and communications technology in the service of national identity, the Arabic language, and to demonstrate the Islamic civilization,
- to provide training for both sexes in the various disciplines of information and communications technology, to prepare national cadres, and to attract international expertise.

The present research is a part of the response to this overall plan. In it both the researcher and the respondents are stakeholders in the development of e-learning. This study demonstrates how the Ministry of Education and the two universities co-operated with the supervising university in the UK.

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Following the publication of this plan, all stakeholders, administrative, scientific, educational, cultural, media, and industrial began implementation whilst the Ministry of Higher Education established the National E-learning Centre (Ministry of Communications and Information Technology (MOCIT), 2009). This is further outlined below.

### **1.7 National Centre for E-learning and Distance Learning**

In 2006, after the national plan described above, which recommended the adoption of e-learning and its applications in higher education, the Ministry of Higher Education established the National E-learning Centre.

The vision and mission of the National Centre for E-learning and Distance Learning proposed an integrated education system depending on the use of modern information and communications technology in the field of e-learning. In accordance with the mission of the government and Islamic principles of tolerance and fairness, this supported the educational process in higher education institutions at all stages and in all categories and segments without restrictions of time or place. Thus, the mission will be served by creating a virtual university in Saudi Arabia for the dissemination of science and knowledge. So this centre will be an essential step, employing all its capabilities to support the educational process in higher education institutions, to facilitate educational contiguity through the optimal use of information and communication technology, including promoting communication and interaction to enable learners to achieve their educational and practical goals. These reflect the goals of the National Centre for E-learning and Distance Learning which are to achieve a number of key objectives, namely to:

- deploy e-learning applications in higher education institutions in line with high standards of quality,

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- contribute to expanding the capacity of higher education institutions, through the application of e-learning and distance learning,
- disseminate awareness of technology and the culture of e-learning, thus contributing to building an information society,
- contribute to the evaluation of e-learning's projects and programs and distance learning,
- support research and studies in the areas of e-learning and distance learning,
- develop quality standards for the design production, and dissemination of digital learning materials,
- advise in the areas of e-learning,
- build educational software and support its dissemination to the public and private sectors to serve the educational process,
- encourage innovative projects in the areas of e-learning and distance learning in institutions of higher education,
- holding meetings, organizing conferences and workshops, which contribute to the development of e-learning and distance learning,
- cooperating with international organizations, bodies and agencies in all aspects of e-learning and distance learning.

In view of the above, universities worked with the National E-learning Centre to apply the initiative, sponsored by the Ministry of Higher Education. To achieve its objectives the centre has adopted a number of projects in response to urgent needs in the area of e-

learning and distance learning. It has supported universities to adopt the latest applications in e-learning systems LMS and LCMS and encouraged the dissemination of knowledge and skills and the exchange of experiences in this area. Below (Figure 1.3) is a sample page of the National E-learning Centre's website. (National Centre for E-learning and Distance Learning, 2009)

Figure 1.3: Snapshot of the National E-learning Centre's website



Accordingly, although the challenge of globalization and global competition is met in various ways in many countries, Saudi Arabia's ethical stance is clearly defined. Whilst globalization has led the movement to add to the curriculum of higher education, Saudi Arabia maintains governmental direction of the required changes. Nevertheless, because of cooperation and competition in the global market, Saudi's educational results must be measurable and verifiable. The challenge of promoting education to meet the needs and requirements of society combines with the challenge of the information revolution to prevent a widening gap between nations. Internally, the challenge of the demand for higher education coincides with Saudi Arabia witnessing this unprecedented digital and scientific revolution. The urgent need is to actively seek to apply technology in all areas, and transform the community into a knowledge based society and economy. Indeed, the application of technology in most government and private sectors faces no resistance or

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reservations. In Saudi Arabia, the technological benefits are very obvious, as are the economic and social ones. Although there is widespread acceptance of information technology and e-learning in these areas, their application in education is facing debate and disagreement about feasibility and effectiveness, the advantages and disadvantages, the requirements and the adjustments, culturally, economically, ethically and socially, legally, and politically, with attendant consequences to health and well-being. This is the importance of knowing the effectiveness of e-learning and its usefulness in all respects in order make informed decisions, backed by systematic proof, to clarify controversial considerations.

Having posed these cultural and ethical considerations, the practical steps for the introduction of e-learning are outlined below.

### **1.8 E-learning in the universities before and after the National Centre for E-learning and Distance Learning**

In the early days the existing infrastructure of information and communication technology and networks, as well as the extent of use of this technology for academic and management purposes and in laboratories and libraries, differed in each university but now there is increasing similarity. The internet entered university life in Saudi Arabia in 1992 and from this year until year 2006 there were various uses by some faculty members at universities, such as virtual synchronous classes using WebCT, to support teaching. The universities developed their potential to use this media, for example to release network services to the offices of faculty members, to provide services connected to the internet in the library and in computer laboratories, and to create the appropriate environment within the laboratories and libraries for the students to be able to benefit from internet services, but such early use was still piecemeal and did not amount to formal applications of e-learning.

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In 2006, with the start of the National Information and Communications Technology Plan and the establishment of the National E-learning Centre, the universities started to adopt e-learning officially (Algarni, 2007, Alhajri, 2005).

Around the time of the establishment of the National Centre for E-learning and Distance Learning, appropriate software became available for e-learning at both the universities. Although, many researchers, when examining or evaluating e-learning have not described the software used for e-learning, the software plays a fundamental role in understanding, interpreting and discussing the results so it is very important to describe its capacities. Such information also supports the recommendations. Indeed, e-learning depends on the quality of both the software and hardware. Conversely, rapid changes in ICT date the results found in software studies and may prevent generalizing of their results to other generations of software as new applications are developed.

Of course, knowing the nature of the software used in e-learning is important because the students' perceptions of e-learning are subject to their perception of the software used at the time of evaluation, as well as the hardware. Thus, their views cannot be generalized to all e-learning, because of the interface between software, hardware and content in the application of learning and teaching. This interface is changing rapidly which causes instability of the results in studies of e-learning and difficulties in comparing any one set of results about e-learning with any other results. Thus every e-learning research is unique even if it addresses the similar questions.

At the time of the study, the King Saud University was using e-learning software called "Jusur" and the Imam University was using e-learning software called "Tadaurs". Jusur and Tadaurs software could both be defined as learning management systems (LMS). The systems enabled universities to publish, present, manage and store the educational content

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electronically. It can be said that software offers most functionalities needed by universities to provide courses and manage them via the internet, including management of the admissions, registration, construction and educational content, and provides the virtual class tools, together with the capacity to build and run the exams, set and collect homework, operate discussion forums, e-mail and learner performance follow-up. In short, these systems operate the full management process of e-learning in all aspects.

Since the researcher obtained a username and password both as a learner and as a lecturer, full access to the two software and tours of them to see their capabilities and characteristics was possible. Although the pieces of software used in the two universities had different names, their capabilities and characteristics were almost same, because of which the researcher tabulated them as the same kind of software and below we will mention the most important shared capabilities, characteristics and specifications that the researcher found from the experience of actual browsing the software and from their user guides (Table 1.2).

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Table 1.2: The most important functions and specifications of Jusur's and Tadaurs's software

Functions and specifications	Explanation
<b>admission and registration</b>	Manages registration, acceptance and schedules at each level, facilitates course changes and re-registration and other administration, moves information between the systems
<b>content</b>	Builds and stores content in any form e.g. learning objectives, questions, exercises, comments, exams, activities e.g. discussion forum, allows search, marking, commenting to students
<b>assignments</b>	Loads assignments setting, scheduling, receiving and feedback via e-mail or homepage, allows individual variation and optional questions, self assessment and security
<b>exams</b>	All the features of the above, question banks to import and export and arrange questions, giving time / duration of exams, automatic and immediate checks
<b>follow-up to performance</b>	Reports open to instructor and student with results, details of attendance, learning input, especially in discussion forums or synchronous and asynchronous lectures and other activities,
<b>discussion forums</b>	Control by either staff or learners to interact between participants as groups or individuals e.g. chat rooms, to do reviews by any cue to all levels with varied posts, to make recreational sub- groups
<b>e-mail</b>	Allows e-mails, and attachments, between selected participants or groups, research and review of all email addresses for instructors and enrolled students
<b>folders / files</b>	Tools for managing files and folders, to create, up load and down load, save and share with instructor and/or other learners and instructors can send what they want to these files
<b>calendar / announcements</b>	Hijri and Gregorian calendars to help lecturers and learners to organize their own schedules, appointments, courses and exam dates and other activities, also bulletin boards to post ads
<b>virtual classroom</b>	Lectures by audio and video, virtual classrooms for comments on electronic boards, monitoring attendance, posts to give permission to learner requests on microphone or text and on-line assistance
<b>specifications</b>	A customised Arabic system for synchronous and asynchronous learning, supporting English, compatible with Windows 2000 or UNIX virgin, uses internet and intranet, compatible with the standards of 1.3 and 1.2 SCORM and AICC and IMS

Each software is recognisable from the snapshot views presented below.

Figure 1.4: Snapshot, showing the main page and virtual classroom of Jusur



Figure 1.5: Snapshot, showing the main page and virtual classroom of Tadaurus



(King Saud University, 2009; Imam University, 2009)

In view of the foregoing review of the location of this study in the Kingdom of Saudi Arabia, there is no doubt that there are differences between it and other countries. The most important of these differences show up in the culture, the economy, the date of the beginning of e-learning, and the degree of the interest in it. E-learning was expected to solve the limitations affecting education in the Kingdom, enabling some students to continue their higher education whilst working, or in spite of geographical location or social or economic constraints, especially problems which may have caused young men and women to leave education to seek a livelihood or prevented them from finding a place

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in universities at the first instance. Although opportunities increased at the opening of universities in Saudi Arabia, this did not ultimately solve the problem of acceptance or lead to the accommodation of all applicants. There still exists a fundamental problem of the number of students exceeding the universities' capacity and this is compounded by a sequential increase in the quantity of the applicants. Also, new universities may need years to meet the demand. In addition there are some regulatory gaps in some educational institutions that tend to exclude some groups of students.

In conclusion, it is noted that, at the time of writing, Saudi Arabia is experiencing a revolution in ICT with implications in every aspect of life, especially, in education. Despite the agreement on the importance of e-learning, the question of its effectiveness is still in dispute and is debated worldwide. Saudi Arabia is similar to other countries in having this debate. Therefore, the following section demonstrates that the controversy exists in other locations.

### **1.9 The importance of the study**

The effectiveness of e-learning continues to divide opinion. Seddon and Yip (1992) proposed that "different measures of effectiveness are needed for different systems" (p.78), yet, by 2006, Levy argued that the "perceived effectiveness of the e-learning system [had] not been fully explored in prior study" (p.3). To fill this gap, this study evaluates the effectiveness of e-learning in Saudi Arabia but seeks a methodology that may be applied in any educational setting. This study is also needed to adjust the existing focus on the peripheral effects of e-learning to examine the effectiveness of the learning in progress such that its results may contribute to a comprehensive evaluation of the effectiveness of e-learning. It responds to many questions from interested observers, stakeholders, officials, faculty members and learners, worldwide, enabling them to assess e-learning and to

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identify its strengths and weaknesses. Consequently, this study may facilitate decision-making in this area by providing information to policy makers. Whilst this research furthers the recommendations of former studies, it avoids the assumption that e-learning is the solution to current educational problems without valid assessment of its effect and usefulness.

The foregoing chapter has established the importance of studying the effectiveness of e-learning during the early years of its application in Saudi Arabia. The next chapter will describe e-learning in general, its definition, history, the positives and negatives of e-learning, its barriers and requirements, its impact and the various types of e-learning available for use including the autonomy and interaction it provides for users.

For the present study the concepts and terminology used by related texts may have evolved from their original meanings so they will be clearly redefined, especially the three main terms in its title “effectiveness”, “evaluation” and “perception”. The evaluative perspectives of related studies will be considered and their implications for research questions will conclude the chapter.

**Chapter 2. E-learning**

**Introduction**

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**2.1.1 E-learning in operation**

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### Introduction

This chapter describes e-learning by discussing its definitions and its history, followed by type, rationale and realities of implementation, evaluation modules, perception and research related to e-learning's evaluation. In concluding the problem of this study and its research questions and purpose will be outlined.

### 2.1 E- learning definitions

There has been considerable debate about a comprehensive definition of “e-learning” in which existing definitions tended to reflect the researchers’ specializations and their interests. For example, historical influences meant that e-learning could be seen by educators as an optional presentation of traditional delivery whilst specialists in the technical aspects of hardware and software differed by prioritizing ICT’s effects on educational and pedagogical relationships (Alshehri, 2002). In the meantime, the impact of technology on education and on pedagogical methods brought a different focus to the debate. Holmes and Gardner (2006) commented on these discrepancies by saying there “may be as many definitions of e-learning as there are academic papers on the subject” (p.14). It is clear from the above that another strand to the argument would be a social science perspective that queries the effect of ICT on learners, learning groups and educational institutions. Nevertheless, available definitions of e-learning were not selected with full agreement amongst researchers, each of whom looked at the field from a different angle. Significantly, as an example of the way studies depended on the nature of interest and specialization of the researchers, funding bodies, producers and programmers made evaluations of their business returns. The following sections discuss those definitions of e-learning that evolved from distance learning, technology and pedagogy.

### **Distance learning definitions**

One perspective in defining e-learning is derived from distance learning. Since e-learning evolved as a form of distance learning, “study by correspondence”, the meaning of the term changed when ICT emerged. One of the most famous definitions of distance learning concerned an educational process in which a significant proportion of the teaching was conducted by someone remote from the learner (Perraton, 2002). This writer also explained it as public education, typified by self-learning that was flexible and did not require the learner to attend a traditional educational institution or be subject to constant supervision by teachers. In view of technological progress, distance learning included the supervision of educational institutions, where multimedia provided mutual interactive communication between the parties of the educational process and support for autonomous learning, at synchronous or asynchronous times and in diverse places. Therefore, it became a middle way or a compromise between traditional teacher-centered learning and student-centered learning.

The link between distance learning and technology lingered in such a way that the two ideas are conflated in some definitions. An example of this which is close to the elaboration of the definition used in this study was offered by Alarifi (2003) when he said that e-learning was a way to deliver educational content “with its explanations and exercises and interaction”, followed-up partially or comprehensively in classrooms or “remotely by advanced programs stored on computers or through networks” (p.4). Similarly, Alsalem (2004) characterized e-learning as “learning systems to provide learning or training programs for learners and trainees at any time and in any place using ICT interactively such as the internet and intranet and teleconferencing, to provide an interactive learning environment with multiple sources synchronous and asynchronous” (p.15). Indeed, the consequences of effective use of technology to deliver learning were noted by Almosa and

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Almubarak (2005) as economical in terms of time and effort and were, therefore, a useful substitute for traditional pedagogy. Autonomous learning was now associated with ICT as shown by Holmes and Gardner's (2006) reference to "online access to learning resources, anywhere and any time" (p.14). Zeitoun further emphasized the importance of:

"delivering learning content via electronic multimedia and computer networks to give the learner the possibility of dealing actively with the content and with the teacher and with peers, whether synchronous and asynchronous, as well as the possibility of the completion of the content in the time, place and pace which suits his circumstances and capabilities" (Zeitoun, 2008, p.15)

Therefore, beginning as an alternative that made education deliverable beyond institutional boundaries, e-learning was later perceived as defining different type of pedagogy.

### **Technological definitions**

Researchers who were intently focused on technological possibilities included the widest range of applications in their definitions of e-learning, supporting the inclusion of "the acquisition and use of knowledge distributed and facilitated primarily by electronic means" with suggestions that "this form of learning currently depends on networks and computers but will likely evolve into systems consisting of a variety of channels (e.g. wireless, satellites, and technologies... cellular phones, iPads) as they are developed and adapted" (Wentling et al. 2000). Indeed, Nichols (2003) defined e-learning as "the use of various technological tools that are web-based, web-distributed or web-capable for the purposes of education" (p.2). Despite the argument that the effectiveness of e-learning cannot be equated with the multiplicity of technological applications used for its delivery, the DfE (2008) statement confirmed that, "If someone is learning in a way that uses information and communications technologies (ICT), they are using e-learning." Watkins (2005) identified e-learning as:

“a term covering a wide set of applications and processes, such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via internet, intranet/extranet (LAN/WAN), audio and video, satellite broadcast, interactive TV, CD-ROM, and more”. (p.17)

Allan (2008) expanded this list further to include “TV, mobile phone, webcam, email, DVD/CD, website, telephone, audio-conferencing, audio graphics, video-conferencing” as technological means of delivering e-learning. For e-learning, then, a wide set of applications and processes were included which were both web and computer-based, offering virtual classrooms, and digital collaboration. Its content could be delivered by modes as various as internet, intranet, audio and video, CD-ROM, satellite, product interactive TV and more.

### **E-learning as pedagogy**

These all inclusive definitions comprised a variety of hardware and software, used to deliver e-learning, and the systems necessary for efficient and cost effective education. As a departure from e-learning’s identification with technology, Khan (2005) labelled the innovation as an:

“approach for delivering electronically mediated, well-designed, learner-centered, and interactive learning environments to anyone, anyplace, anytime by utilizing the internet and digital technologies in concert with instructional design principles”(p.3).

Thus, his definition introduced the notion that technology should serve the purposes of traditional pedagogy. Within this trend, Conole and Oliver (2007) described e-learning as “the term most used to present the broader domain of development research activities on the application of technologies to education” (p.4). Nevertheless, it was then established that technology must be harnessed by pedagogues before it could be seen as means of educational delivery.

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Whilst flexibility offers a response to different approaches to learning and time and place constraints, e-learning made these priorities viable so that learners could stay anywhere and study, but an effective system capable of enabling the learners to communicate with others and help them to learn and grow positively was required (Schank, 2000). “The European E learning Action Plan” emphasized “the use of new multimedia technologies and the internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaborations” (Com, cited in Holmes and Gardner, 2006, p.14). E-learning was firmly sited within an educational community in spite of learners’ choices of their own space and time when Almuheisin (2002) classified it as a “type of learning which is based on the use of electronic media for communication between teachers and learners and the educational institution” (p.3). The tripartite relationships between pedagogy, technology and educational administration was part of Aldrich’s (2004) definition of e-learning as “a broad combination of processes, content and infrastructure using computers and networks to scale and/or improve one or more significant parts of a learning value chain, including management and delivery” (p.240).

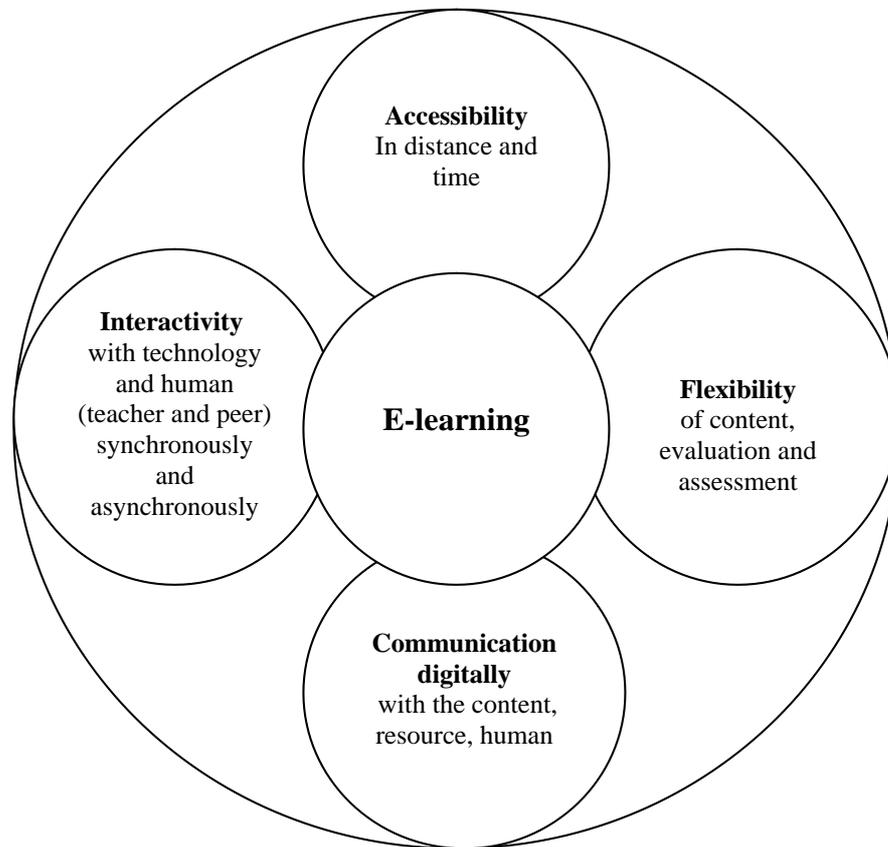
So, in spite of the fascination with equipment, as shown above, e-learning cannot take place unless there is a simple rationale for combining the elements of technology, pedagogy and administration. In view of which the social science focus on the learning environment and its positive and negative impacts on the construction and composition of the school community and the perceptions of learners must necessarily be included in studies of e-learning. The query remains whether the business sector's focus on the expected returns is entirely pertinent to this argument about e-learning's effectiveness but all previous definitions of e-learning have omitted it, whilst other characteristics have been found throughout the examples offered above.

These characteristics are grouped as follows:

- e-learning depends on the combined use of ICT and united or disunited networks, through interactive electronic devices, to deliver educational materials and messages between participants in the learning and teaching process,
- not only does e-learning deliver content, but it includes all aspects of educational administration and planning from setting goals to assessment and evaluation,
- e-learning may complement classroom learning or be a substitute for it,
- e-learning is conducted under some form of supervision,
- e-learning does not electronically duplicate the delivery of formal education but offers alternative approaches to teaching and learning and is systematically designed to produce inputs, processes, outputs and feedback.
- participants may engage in e-learning synchronously or asynchronously,
- e-learning refers to the complete management of learning as in the terms “Learning Management System (LMS)” and “Learning Content Management System” (LCMS),
- e-learning facilitates self-learning, lifelong learning and personalization,
- e-learning is applicable to both educational and training purposes whether within or outside institutions or in-service settings.

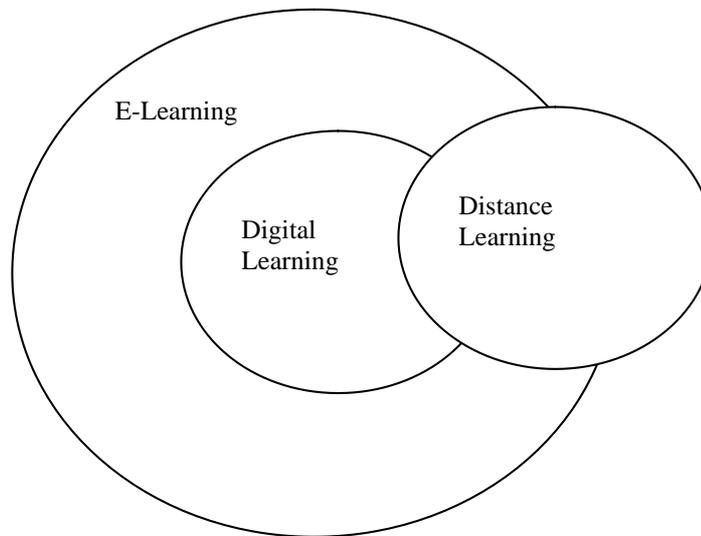
The foregoing section has considered definitions of e-learning. It has shown the development of three strands of definition over time: the distance definitions, technological definitions and pedagogical definitions. It has traced the combination of these three strands and has itemised the characteristics that have emerged as common and applicable. The figure (2.1) summarizes the essential characteristics of e-learning.

Figure 2.1: the essential characteristics of e-learning



The above diagram shows the essential characteristics of e-learning as they were discussed in previous literature. Not only have these definitions undergone changes in the course of e-learning's history, so have their names. The names by which e-learning has been known up to the time of writing, notwithstanding the clarification of definitions, frequently overlapped. Some researchers combined their terms into compound nouns such as "computer-based learning" and "network-based learning". Other names such as "digital learning", "smart learning" and "virtual learning" were also used. In fact, the overlapping can be, to some extent, clarified by Figure (2.2) showing that contemporary e-learning includes digital learning and distance learning. Indeed, further confusions can be avoided when searching for "e-learning" in the literature by being aware of five alternative forms: "e-learning", "elearning", "'e' learning", "E-learning" and "e-L".

Figure 2.2: E-learning's ambit



To summarize, previous literature contains no common or specific definition of e-learning. The concept is broader than many of the attempts that have been made to define it. In fact, the definition of e-learning is subject to its association with technology which is mutable over time. Definitions must necessarily include e-learning's flexibility of time and place and its interactive fulfilment of pedagogical requirements. The foregoing section has considered available definitions of e-learning and how the term is used in the literature. The following section will describe the particular e-learning programs that were the focus for this study.

### **2.1.1 E-learning in operation**

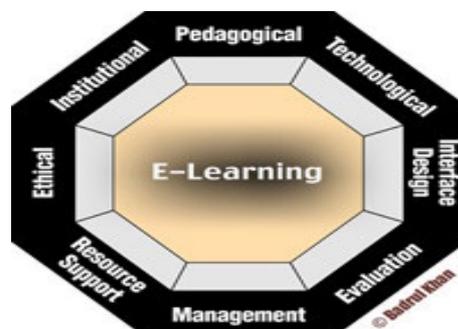
Two examples of e-learning were chosen for this study. They were operational in the two universities in Saudi Arabia. Both programs demonstrated methods of learning using ICT (hardware, software, networks) to deliver the educational content so that the learners could learn autonomously (any time, anywhere, at any pace) and could be interactive and communicative with other parties in the educational process synchronously and asynchronously.

Several factors contributed to the generation of a useful online learning environment, in each of the two universities. Further, in each case, many of these factors were interconnected organizationally, and were inter-dependent. A formula, suggested by Khan (2005) helps to explain the application of e-learning in new situations by proposing eight dimensions, which are summarized below.

### 2.2 Dimensions of e-learning

Reflection on significant factors for the establishment of effective environments for e-learning, enabled Khan (2005) to develop a basic framework for e-learning or web-based learning. Khan questioned what would be required to provide widespread, flexible and effective learning environments for all the learners regardless of their culture or circumstances. To answer this Khan proposed eight dimensions: pedagogical, technological, interface, evaluation, management, resources support, ethical, and institutional. Each dimension had sub-dimensions covering specific aspects of the e-learning environment (Khan, 2005).

Figure 2.3: Dimensions of e-learning Source (Khan, 2005)



Below these dimensions are grouped according to the three strands identified in Section (2.1) above.

### **The technological**

- **The technological** dimension referred to issues about the infrastructure of e-learning environments. It included the planning of infrastructure and hardware and software.
- **The interface design** was the appearance of the e-learning programs. This included the design of the site, the pages and content, navigation and usability tests.
- **The resource support** comprised online support and counselling, such as technical support and professional guidance. Khan showed that resources were required to enhance the active and interactive meaningfulness of the learning environment.

### **Administration**

- **The management** referred to the maintenance of the learning environment and the distribution of information relevant to its use.
- **The institutional** dimension included administrative issues such as regulations and certification, budget and investment returns, information technology services, educational development and marketing services. On the one hand this dimension encompassed academic affairs, such as supporting the teaching staff, educational affairs, and the pressure of work, the size of classes, salaries and intellectual property rights. On the other hand it also provided for students' services such as pre-school services and information on attendance and programs, guidance and assistance in financial matters regarding registration and the payment of premiums and included supporting libraries and such other facilities as social support networks.

### **The pedagogical and ethical**

- **Pedagogical** dimension referred to teaching and learning. It comprised the goals and objectives, content analysis and instructional design, practice methods and

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strategies of its programs. These included simulation, training, private lessons, games and narrative stories and role-playing games, discussion and interaction, modelling and cooperation and other such activities.

- **The ethical** dimension referred to social and cultural diversity, prejudice and geographical diversity and the diversity of teachers and acting systems including legal issues such as organizational policy, and copyrights.
- **The evaluation** included an assessment of learners and instruction and of the learning environment.

Khan (2005) concluded the eight dimensions by emphasizing that each e-learning project was unique so, formulating questions specific to the issues associated with each project was essential. One way to highlight the important issues was to perceive each dimension from the client's perspective whether stakeholder, learner, teacher or staff member. The exploration of each dimension would then highlight issues faced by each stakeholder. In this way, research could raise important issues and answer the questions that could assist in the design of a beneficial environment for e-learning. Thus research studies would generate a comprehensive list of e learning projects' requirements.

The history of e-learning clarifies the importance of Khan's work, marking significant changes in decision making by universities, ministries and governments, which may include the societal implications of e-learning more and more as technology increases interactivity. So another sketch of e-learning's development is appropriate here. The next section considers the interactive developments within the field.

### 2.3 History of e-learning

Whilst this section attempts to describe the history and development of e-learning, the complexities that have been outlined will be considered less than the capacity of the discussion to highlight the interactive potential of current ICT applications.

Taking into account that e-learning is an extension or form of distance learning, its roots in various locations can be traced to the early years of the nineteenth century, when courses were submitted by correspondence (Cavanaugh, 2004). In the early twentieth century, distance learning was informally rooted in Britain, until 1971 when, as Abdulaziz (2008) mentioned, it was formally established by the Open University, to be transferred, later, to the U.S., Canada, Australia and other countries. Writing from a different standpoint, Aloreani (2002) stated that it started in the nineteen sixties when B.F. Skinner wrote about programmed learning. Notwithstanding these alternative views, distance learning has been developed by the ICT revolution. Kaufman (1989) stated that there were three generations of distance learning: the first generation, distinguished by the use of correspondence and the absence of direct interaction between learner and instructor; the second generation, distinguished by the use of multimedia and content specifically designed for distance learning; the third generation, distinguished by using the internet and by the introduction of two way interaction between learners and instructors and amongst the learners themselves.

As noted above, the most recent of these generations has intrinsic ICT features. This has been accompanied, in recent years, by an increase in the users and an increase in the learners' control over their learning and their opportunities for dialogue and the promotion of thinking skills. Sawaan's (2005) summary of the evolution of e-learning offers a step by step analysis from distance learning in the nineteen fifties, using radio, then

## Chapter Two: E-learning

correspondence, then audio and video recordings, through the establishment of the open universities, to the nineteen eighties, (computer- based -learning) where these methods became complementary to traditional education. Sawaan continued his analysis to include the period from the nineteen nineties, (internet- based-learning) with the emergence of the WebCT and Blackboard.

Recent events suggest that to complete the picture, another step could be added, from the beginning of the twenty-first century, when the design of Websites became more advanced. This enabled users to design, control, implement, manage and evaluate the processes of learning and teaching, via high-speed bandwidth (DSL). To facilitate these developments investments have been made within the education system. In response to learners' interests additional social networks are also used (Facebook, blogs, You Tube, My Space, Second Life and Wikis).

Examples of the latest technological devices are e-books, e-paper, iPods, iPads, voice recognition, Wikis, multi-touch interfaces, Pod casts, and others. All these developments have led to a change of the concept of e-learning, both in its presentation and in the levels of interaction and in the multiplicity of its interactive aspects.

Other researchers have commented significantly on these changes. Almosa and Almubarak (2005) identified four generations of ICT use in education, starting with correspondence where post and telephones were used and interaction was rare. Second generation was typified by radio, TV, and Video with interaction at the same level as in correspondence. The third generation was distance learning which concentrated more on electronic interaction and the communication between the student and his tutor. Finally, he posited the fourth generation, the present time, with the web and its developments. This identification

of the available technology with the pedagogy it is capable of supporting represents a clear view.

To summarize, the controversial histories of the beginnings of e-learning trace its roots either to a hundred years ago, or to the end of the nineteen fifties, or to the emergence of programmed learning in the nineteen sixties, or to the eighties when computer-based-learning emerged. Regardless of all these suggestions, others said that the real start of e-learning was at the beginning of the nineteen nineties, which witnessed the employment of the internet in the educational process (Holmes and Gardner, 2006). Where there is no common and specific definition of e-learning, its history can be looked at from many angles such as technological, pedagogical, or social and administrative.

Within this study, the beginning of nineteen nineties is considered the actual start of e-learning's' history with the widespread use of internet in education and its capacity to provide interactivity. In view of the key role of this technological development, a snapshot of the history of the internet follows.

### **2.4 Internet history**

This section will show that the internet, because of the amount of information it contains, accessible through its tools of communication, is the essential medium for the emergence of e-learning in its current form. Previous methods of distance learning lacked interactivity. The emergence of the internet resolved this by facilitating interaction with the content between instructors and learners and among learners themselves.

In 1969 the internet emerged for the first time in the USA where a group of American scientists communicated with each other through a network of four large computers

distributed in different centers. It was called ARPANET and aimed at exchanging military information and files.

- In 1971, ARPANET expanded to twenty centers.
- These grew, further, to sixty two in 1973.
- In 1974, other networks were established for scientific and educational goals.
- In 1981, the network was expanded gradually until it included more than two hundred web sites.
- In 1983, it was divided into two sections: military and civilian.
- In 1989, the National Science Foundation (NSF) was established to allow access to specialists and university professors only.
- In 1990, the WorldWideWeb was established.
- In the middle of 1991 the WorldWideWeb was opened to the public via the internet.

This basic network evolved rapidly with initially the exchange of only short text messages until now when its use includes text, graphics, videos and audio. The number of users doubled worldwide has expanded exponentially, in March 2008, about 1,407,724,920 were reported (Ronda, 2000; ISOC 2008; Abbate, 1999).

Having clearly aligned the history of e-learning with the development of the internet, the types of e-learning and the application of available systems to education will be examined so that the e-learning in operation at the centre of this study can be fully understood.

### 2.5 Types of e-learning

There are many ways to classify types of e-learning. Some types have been classified according to the extent of their employment in education, and some based on the timing of interaction. Generally, e-learning can be divided into two basic types: computer-based-learning and internet- based-learning.

Computer-based-learning involves the use of a full range of hardware and software generally available for ICT use and each component can be employed in either of two ways: “computer-assisted-learning” and “computer-managed-instruction”. In computer-assisted-learning, computers are used as a complement or instead of traditional methods by offering interactive software as a reinforcement tool within the class or as a self learning tool outside the class such as software for drills and practice, simulation, games, and problem solving. In computer-managed-instruction computers are used for storing and retrieving information to assist in the management of education such as in data processing. Although developments have overtaken both these types of use, they are still current for certain purposes and in certain situations.

Internet-based-learning is a further development of computer-based-learning that makes the content available on the internet, intranet and extranet with the availability of links to sources of related knowledge such as references and e-mail services which learners could use at any time, any place, in the presence or absence of instructors (Alkalifah, 2007; Almosa, 2001). This was classified, according to Zeitoun (2008), by the extent of such features’ employment in education, into “adjunct mode”, “mixed or blended mode” and “totally online mode”. Adjunct mode complements the traditional method as needed. Mixed or blended mode provides an interim degree for a partially traditional method with

some tools like e mail and video conferences. Totally online mode, the most complete innovation, entails the sole use of the network for learning.

The totally online mode can be synchronous or asynchronous by applying optional timing of interaction. The former timing involves alternate on-line access between learners and instructors or learners and other learners and the latter allows any participant(s) to post communications to any other participant(s) over the internet. The synchronous mode enables learners to “chat” and discuss with the instructors and among themselves through the internet at the same time using tools such as the chat room, videoconference and similar means, this type offering the advantage of immediate feedback. The asynchronous mode enables learners to discuss with the instructors and among themselves over the internet at different times so it is not interaction at the same moment but later, using tools such as e-mail, thread discussion, and similar techniques. An advantage of this type is that the learner learns at a time that suits him whilst a disadvantage is that the learner does not receive immediate feedback (Almosa and Almubarak, 2005). It is notable that synchronous and asynchronous use may occur closely, inside the class, or remotely, off-campus, and may occur under the instructors’ supervision or without direct supervision.

From these available modes of computer use, the two universities studied for this research chose the blended mode and the totally on-line modes and selected hardware and software from a wide range of options available. At the time of writing, the application of computers and software in education is still developing rapidly. It has taken several forms, from those dependent on the personal computer (distance learning) to those dependent on networks (e-learning), to those dependent on wireless networks (Mobile learning). Indeed, the current tools rely on computers and networks to provide educational content to the learner in an effective and interactive manner such as the internet, intranet, extranet and video

conferences, virtual learning environments (VLE), and multimedia such as text, graphic, audio, animation and video elements. Possibilities for implementation proceed as far as interactive multimedia, hypermedia and other innovations not yet known at the time of writing (Jacobsen, 2002; Alkalifah, 2008).

Having described what is generally available, Chapter One specified the particular components used by the universities involved in this study. Meanwhile, to complement the foregoing account of the relevant technology in hardware and software, the next section will introduce some general comments about e-learning management, e-courses and e-learning environments.

### **2.6 E-learning management**

E-learning management includes templates ready for instructors to fill in with the appropriate content, and upload on the internet for the learners' use. For example, learning management systems (LMS) and learning content management systems (LCMS) are alternative developments of similar use.

Learning management systems (LMS) are items of software that do not focus on the content but are designed to present, manage, follow up, or evaluate all learning activities on the internet and can be synchronous or asynchronous. Examples of such products are WebCT and Blackboard. Learning Content Management Systems (LCMS) are a further developed generation of LMS, but they allow authors to participate more in creating, using and reusing the content. So it is software easing learning by networks and focusing on the content. Although the foregoing definitions are easily confused, the essential difference is that LMS is related to learner management while LCMS relates to content management and it reaches the learners indirectly. In fact, the similarity of their abbreviation causes

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confusion. In spite of putting them under different names; they are complementary to each other. LCMS is often integrated into LMS' functions and they are applicable interchangeably, becoming a part of the each other, particularly if they are designed using the same standards (Alkalifah, 2008).

Both the universities sampled for this research used the full range of systems available as well as having access to all of the tools outlined below. Identified by Alsalem (2004) as “designing content dependent on computers and on broadcasting through the internet where learners can learn without their physical presence at the campus” (p.38), e-courses consist of a number of tools that enable learners to learn and interact with their instructors and classmates such as those which are explained below Table (2.1).

Table 2.1: Explaining e-course functions

NO	Function	Description
1	course homepage	the starting point, like a book's cover which, through a group of buttons, enables the learner to browse all parts of the course
2	course content	the information, uploaded by the instructor, comprising a selection of multimedia lectures, readings, assignments, simulations, slideshows, links and other technological devices presented in various ways
3	chat room	an on-screen space for synchronous chatting amongst participants by means of instant text
4	discussion board	a document, or group of documents for asynchronous, exchanges between learners and instructors
5	announcements' board	a screen, related to the course, for announcements to participants
6	calendar	a grid that can be used to determine appointments and all task due dates
7	external links	a list of web sites related to course
8	homework drop box	a place for learners to attach their assignments for preview and assessment by their instructors
9	grade book	a record of learners' grades and how they are distributed
10	e-mail centre	a means of sending private e-mails to their instructors or to colleagues
11	personal home page	a personal introduction for learners and instructors

It should be noted that the tools included in the table are subject to rapid change according to the evolution of ICT. Educational institutions, these days, rely on a series of software such as Blackboard and WebCT, which enable the instructors to create courses on the internet (Alkalifah, 2003; Alsalem, 2004). Thus, it is clear that course planners have the capacity to carry out many aspects of pedagogy among a large number of learners who are distant from the university in terms of place and time.

By considering the tools that are available, the flexibility of the e-learning environment has been demonstrated. Technological aspects of this environment are described below.

### **2.7 E-learning environments**

Coinciding with the emergence of the e-learning terms, concepts and applications described above, the most famous is, perhaps, the “e-learning environment”. Once again, the general use of this term will be examined.

Open, flexible learning environments imply that learning can be done in the learners’ locations, at their time, at their own pace and according to learners’ own decisions, whereas “distributed learning” means allowing instructors, learners and content to be far from the centre, at different locations. Neither learning times nor venues are related to a unified schedule but learning can be done by traditional methods in real or virtual classes (Khan, 2005).

According to Zeitoun (2008), Livingstone and Kemp (2006) and Piccoli et al. (2001), there are two types of e-learning environment: the reality learning environment and the virtual learning environment. However, other writers acknowledge three, the third being the personal learning environment. Whilst the first two require group participation under the

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administration of an educational institution, the third can be operated by single learners without supervision. The distinction between reality learning environments and the virtual learning environments on the one hand and personal learning environments, on the other, will be described below.

Reality learning environments (RLE) are classrooms where the space is partially equipped for e-learning; for example, there may be a limited number of computers or one screen in the front. Virtual learning environments (VLE), on the other hand, are open systems for learning in ways similar to reality but provided on the internet where the instructors and learners meet, communicate and interact synchronously and asynchronously. Conole and Oliver (2007) define VLE as “a collection of tools that support learning processes” (p.135). These tools include online discussion forums (through bulletin boards or chat facilities), tools for the submission of group work; assessment tools and other features mentioned above. These VLE’s may be created on templates available from a number of sources such as Blackboard and Moodle. In a personal learning environment (PLE), however, learners manage their learning completely independently (Van Harmelen, 2006).

Virtual environments are predominantly used for e-learning and were available at the universities chosen for this study. The ICT revolution makes learning environments more flexible and appropriate to meet learners’ needs. Importantly, learners can contribute to the content by using the tools available on the internet. This possibility first occurred when educational content became widely available on the internet, produced either by individuals or institutions.

Having described what is meant by e-learning, the rationale of its introduction can be analysed from a global, individual and administrative point of view. The global trend now

is to make learning unrelated to place and time and to transform it to autonomous learning, a life-long process, based on each learner's needs. E-learning is used because its flexibility is compatible with current economic and social trends and can facilitate communication. This conforms to individuals' rights to access and get knowledge even if it is distant and to get opportunities to learn at any age. This philosophy is served by e-learning's shift of focus from teaching to learning and from teacher-centered-learning to learner-centered-learning, accommodating the learner's requirements to learn according to his/her needs, interests, abilities, and at his/her own pace.

These arguments advanced to justify the use of e-learning must not lead us to assume that the objective of improving levels of achievement in the educational process, and providing learning opportunities at any time and in any place are assumed prior to investigation. Such outcomes of e-learning and others, found in the related research, are expanded below.

### **2.8 The positive aspects of e-learning**

One of the most important benefits of e-learning is said to be its capacity to help to manage the explosion of knowledge, and meet the growing demand for education. Shtat (2004) concludes that e-learning provides interactive, enjoyable, motivational learning environments with multiple sources which ease the processes of updating content and ease learning and retaining knowledge and meet individuals' needs. The benefits of e-learning are drawn together from the literature as listed below.

#### E-learning

- compensates for shortages of academic staff,
- provides administrative support such as registration, classroom management, and evaluation,
- facilitates communication and enhances the relationships that support learning,

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- facilitates a generation to deal with ICT developments and keeps them up with the newest developments,
- enables teaching large numbers of students without the restrictions of time or place, whilst offering the possibility of exchanging dialogue and debate,
- supports autonomous learning,
- allows the immediate and rapid assessment of results and immediate correction of errors,
- encourages parents' participation,
- cares for individual differences,
- provides knowledge from multiple sources,
- enables learners to get information quickly,
- makes it easy to update content,
- motivates students to interact with, exchange and respect different viewpoints,
- provides easy access to the instructor even outside official working hours,
- meets each learners' learning styles,
- provides content twenty-four hours a day and seven days a week,
- does not need the physical attendance of service personnel,
- gives ease of accessibility and multiple ways to assess and evaluate learners,
- optimizes the use of time,
- reduces administrative work, (Urdu and Weggen, 2000; Codone, 2001; Almosa, 2001; Alsalem, 2004; Amer, 2007).

Rabah (2005) also states that, through e-learning, goals can be achieved in the shortest time with least effort. This can inspire both instructors and learners to attain and keep up with developments as they gain experience provided by multiple experts in various fields of knowledge. The impact of e-learning on educational ethics is ensured because the e-

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learning environments are unprejudiced so they are a good means of providing equal access to the information world regardless of users' locations, ages and ethnic origins, races, or languages (Khan, 2005). E-learning environments also help learners to rely on themselves because instructors are no longer the only source of knowledge. Instead, they become guides and advisers (Alsalem, 2004). Problems of curriculum development are aided by ready access to rapid changes in knowledge. E-learning also helps to prepare the society to communicate and to dialogue with others, globally (Zeitoun, 2008).

To summarize the foregoing list, researchers suggest that the potential benefits are greater than those of traditional learning if e-learning is used and applied in appropriate ways. Nevertheless, according to Higgins (2008), there are some doubts arising from the points above and before we leave the benefits of e-learning it is useful to list these:

- availability (any time any place) is only for those who have the proper technology and proper place without disturbance or interruption,
- the use of multimedia requires a sufficient bandwidth and this is easier and less expensive to provide in a classroom setting,
- the capacity to accommodate individual styles of learning depends on how the program is developed,
- updating is sometimes overwhelming and costly, just as it is to update paper information,
- e-learning depends on many elements including the number of learners and content of

the program and the novelty effect may be more expensive and difficult to maintain than in classroom-based programs.

Having surveyed the benefits of e-learning according to the literature and Higgins' (2008) corresponding doubts, it is important to consider the negatives as found by other researchers. These are listed below.

### 2.9 The negatives aspects of e-learning

Despite the multiple benefits of e-learning, which have made it a popular development, related research suggests some negatives associated with its application. It has been shown to:

- focus on cognitive more than physical and affective aspects of learning,
- be more applicable in social science than in some scientific fields, such as medical science and pharmacology where practical skills need to be developed,
- limit its input to hearing and vision rather than including all the senses,
- develop tendencies to unsociability due to lack of face to face communication,
- depend on efficiency, good infrastructure, quality of design and technical support,
- require generous budgeting for its establishment and, more especially, its maintenance,
- weaken the socialization role of institutions and the instructors' roles as directors of the educational process,
- appear an uninteresting avenue for employment because of the extensive ICT recruitment in many other fields,
- serve the needs of many ICT companies whose goals are to make profit,
- some may be misled into copyright violation (piracy or plagiarism), influenced by lack of selection skills and the apparent ease of copy and paste,
- congestion or heavy use for some websites may lead to unexpected costs in time and money (Passey et al. 1997; Collins et al. 1997; Michel, 1996; Scott et al. 1999; Lewis, 2000; Alarifi, 2003; Alshehri, 2002; Almosa, 2002; Alsalem, 2004; Amer, 2007).

In spite of all the foregoing negatives of e-learning, there are a lot of positives which encourage its use and promote the search for ways to minimize negative consequences.

### 2.10 Barriers to e-learning

Many advantages of e-learning and educators' enthusiasm for its use, as well as the negatives listed above, arise directly from the technology and its applications, however, two researchers also found social, administrative and financial barriers to its implementation, these are listed below.

- lack of clarity about standards and regulations applied to e-learning and about how to offer appropriate incentives to learners,
  - decisions are often taken away from educators by technicians, without taking into account the interests of the learners,
  - privacy, confidentiality and content can be penetrated or 'hacked',
  - absence of filters for unwanted sites and advertising and inability to identify the perimeter of communication,
  - insufficiency of learners' responses to the new form of learning,
  - the continuing need for training and support for learners and administrators,
  - overwhelming global competition in the dissemination of high quality contents,
  - the existence of old regulations that do not go along with the e-learning philosophy
- (Almosa, 2002; Zeitoun, 2008).

A measure of the pervasive influence of the barriers listed above is found in studies such as Michel (1996), who affirmed that in spite of spearhead internet applications in the private sector, developments in education tend to happen more slowly than expected. There are language constraints because most internet content uses English which means no other

language is fully advantageous. Indeed, many search engines demonstrate low levels of accuracy. Suspicions about internet use are common and unknown websites substantiate the need for caution. Significantly, in recent literature Alsalem (2004) pointed up a weak infrastructure, connection difficulties and high fees. He went on to suggest that educators are unfamiliar with using and navigating sites and faculty members are not convinced about using them. Lack of awareness of the importance of e-learning in all levels and unfamiliarity with its requirements hamper the progress of e-learning. Educators fear losing their roles, whilst members of the community regard the quality of e-learning as lower than learning by traditional styles. Non-recognition of e-learning certificates persists in some countries so learners need to be strong willed and self motivated.

It has already been made clear that e-learning has some obstacles that have impeded its application or limited its spread. The following section presents researchers' analyses of some of e-learning's requirements to overcome these obstacles.

### **2.11 E-learning requirements**

E-learning has become a reality. It is used not just as a process of transferring content from paper to electronic files but as a process that affects many aspects of life. Consequently, it requires particular elements to achieve its objectives, the foremost of which is that the electronic content should be interactive. E-learning includes appropriate activities to vary the learning environment. These include:

- planning for e-learning,
- provision of financial and human resources,
- human resource development to provide instructors, learners and executives,
- developing digital content as an interactive mode, according to high standards,
- developing interactive learning portals containing the standards of LMS and LCMS and

high-quality systems for testing and measurement,

- involvement with the private sector in building the foundations of e-learning and reducing the cost of e-learning,
- establishing change at managerial levels (Alshehri, 2002; Alfeleh, 2004; Amer, 2007).

Notwithstanding all of these issues, a review of the impact of e-learning as shown in the literature follows.

### **2.12 The impact of ICT in education**

The explosion of internet use and availability of personal computers have fundamentally changed the concept of education (Zhang and Nunamaker, 2003). The ICT revolution has led to radical changes and shifts across communities so they no longer use ICT in education as a luxury but as an urgent necessity. The traditional method is difficult to apply in the information age. Schofield et al. (1997) predict that the real impact of the ICT revolution is to be seen not behind, but ahead of us.

It is Almosa's (2002) view that to face the challenges institutions should embrace ICT and challenge its negative impact. Thus ICT can be used to improve education significantly by personalizing it for different purposes, at different levels and at every learners' own time, place, style and pace. On the other hand, he predicted that the borders between education, work and recreational activities will blur. He suggested that educational institutions re-examine their programs and their contents, objectives and plans to keep pace with change without challenging their national and cultural identity.

Abdulaziz (2008) also recognizes the far-reaching effects of ICT in education. By analyzing the required changes in the traditional roles of the most important stakeholders in

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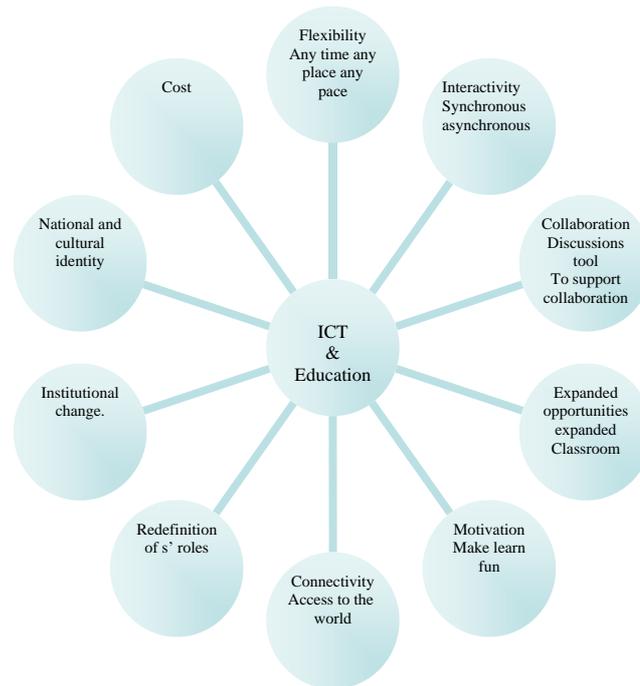
the educational process, he suggests the impact of this innovation. Learners' roles change from passive to active. Their autonomous learning, involves information retrieval, being interactive and able to evaluate and interpret content. Their instructors' roles vary from pedagogy to mentoring. He predicts that their role will remain important and essential because e-learning does not mean to surf the internet openly, but by specific ways and under guidance and this is a crucial part of the teachers' role.

In debates beyond Saudi Arabia, Clark and Kozma ask whether the media or pedagogic method impacts most on the educational use of ICT (Clark, 1983; Kozma, 1994). Nevertheless, it is evident that ICT is impacting all aspects of education. The major impact of the network is not about the ease of getting information, nor the ease of access, nor the increasing use of educational software, but in its ability to support the social construction of new knowledge and develop it by global participation. So ICT is concerned with quality. This promotes, as the goal of contemporary education, the importance of giving learners the required capabilities and strategies to deal with large amounts of information and preparing them to learn continuously. Such are the distinctive characteristics of education in the knowledge era. ICT also creates an environment in which effective autonomous learning is basic to each learner's success, as is developing critical thinking skills and continuing into life long, self-directed learning (Garrison and Anderson, 2003). Wellington (2004) includes in the role of ICT in education encouraging problem solving, modelling, classifying, sorting, questioning, pattern finding, data exploring, researching, and promoting group work.

Holmes and Gardner (2006) note e-learning's capacity to assess the students as they learn, whilst expanding their educational experiences, through interactivity appropriate to community education, globalization and cultural diversity, and eliminating boundaries of time and place.

Notwithstanding the foregoing, the most important characteristic of e-learning in education is that it is learner-centered interactive learning. Its aspects, as discussed in the literature, are depicted in Figure 2.4 below.

Figure 2.4: Summary of critical aspects of ICT's impact on education.



(Developed from Almosa, 2002; Garrison and Anderson, 2003; Wellington, 2004; Abdulaziz, 2008; Holmes and Gardner, 2006)

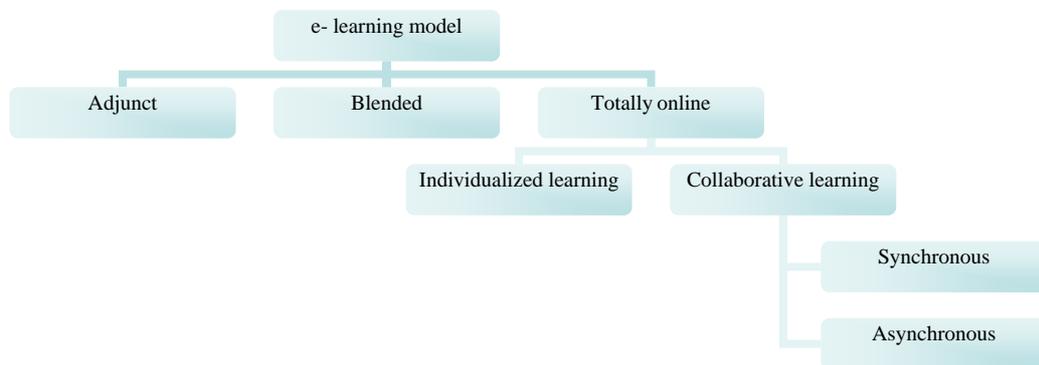
The most critical aspects of ICT's impact on education, as found in the literature, are shown in the above diagram which summarizes the foregoing section. Six items on the diagram may be seen as positively impacting the administration and quality of learning whilst four items may constitute a challenge to the institutions concerned in its delivery. In the sections that follow a closer look at the implications of some of the aspects above will be offered.

### 2.13 Employing e-learning in education

Just as there are different types of e-learning, so three distinct models for the employment of e-learning in education have been defined. The first is as “adjunct”, in which e-learning

acts as an assistant in the traditional classroom offering relative independence to the learner. The second is “blended e-learning”, in which delivery is shared between traditional learning and e-learning in the classroom setting. The third is “online”, which is without classroom or traditional learning participation, where the e-learning is total so that the independence of the learner reaches its maximum. This third model is divided into individual and collaborative learning with the second option being sub-divided again into synchronous and asynchronous learning (Zeitoun, 2008). Figure 2.5 shows the three models for the employment of e-learning in education.

Figure 2.5: The three models of e-learning in education



Having summarised the three types of e-learning available for application, the following section will trace the relation of this innovative delivery through its procedures and practices.

### 2.14 Interaction and communication in e-learning

E-learning is interactive learning, allowing the learner to interact with the content, with colleagues and the instructor, whether synchronously, through such tools as chat rooms, shared whiteboards and video conferencing or asynchronously, through e-mail and group news. Thread discussions and discussion forums also provide interactivity. This, then, is

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the main feature of e-learning which can, in fact, be defined as electronic interaction between the learner and instructor, learner and learner and learner and content (Allan, 2008; Phillips, 2004).

Communication is defined as the exchange of information and is considered basic to the learning process. Zeitoun (1998) identified communication as “the process of interaction between the two parties or more about a particular message- notion, concept, opinion, skill which transfers a message between the sender and the receiver through a selected channel” (p.23). This interaction by verbal or non-verbal means, through the appropriate channels, includes computer networks and their hardware and software. ICT enables two or more parties to transfer their experience (cognitive, psychomotor and affective) from one to the other electronically. The universal elements of communication are the sender and the receiver, a channel and feedback, role reversal being an expected response. The established relationship between learning and communication suggests that the key to learning is interaction. Traditionally achieved face to face, interaction is now available electronically via video conferences, chat rooms and other means.

Garrison and Anderson (2003) mentioned that all forms of learning occur as interactions between instructors, learners, and content. Two corners of this triangle being human, the other non-human, all are essentials for e-learning. They also suggested six types of interaction, of which the three most important are learner-instructor, learner-learner, and learner-content. These, the three essential types of interaction in e-learning, are reflected in the research design of the current study so each one will be more fully considered in the following paragraph.

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Interaction may be learner with content or learner with instructor or learner with other learners. The learners' interaction with the content, accrued through website links, e-libraries and laboratories, was the centre of attention in e-learning. ICT opened new opportunities such as mini virtual environments to provide immediate and appropriate content to meet the learners' needs. Simultaneously, several means were developed to facilitate learner-instructor interaction, including both direct communication and indirect communication. Although such interactions also form a part of face to face pedagogy, Almosa (2002) described learner-learner interactions in e-learning as contrasting similar interactions in traditional learning where individual learning was encouraged. Supported by the lack of learning materials in previous times, individual learning continued until supporters of constructivism emphasized the necessity for interaction between learners. They demonstrated that group learning had positive results and helped learners' social skills, as well as enabling them to complete tasks which were important for the establishment of acknowledged learning communities. Instead of resulting in confusion or misunderstanding, interactive environments replaced direct human interaction. Bates (2005) pointed to two different types of interactivity: the first, isolated and individual, such as learners' interaction with content and the second, social and mutual, between two or more learners. He emphasized that both types of interactions were important to learning. To facilitate quality interactive activities, e-learning tools were developed. Links were constructed between the instructors and learners, whether individually or in groups, as well as synchronously or asynchronously. In the past, content was static and unchanging, awaiting consumption by learners, now learners could move the content and add features and manage it, select and adapt it to meet their needs. The interaction between learners, instructors, and content were an important part of the learning process. Garrison (1998) suggested that this interaction could happen in three stages: first, learners interacted with themselves, and then, secondly, learners interacted with other resources that were available

(human or nonhuman), then thirdly, learners interacted with the information they had obtained. Garrison further outlined several options in the type and nature of the appropriate interaction. It could be one-way, such as navigating an internet page, or two-way, such as a discussing between instructors and learners, or multiple ways such as discussing via threaded boards. It was found important, while using ICT in education, to give appropriate attention to each available form of interactivity (Garrison and Anderson, 2003).

The foregoing has outlined how technology has allowed pedagogy to reach beyond the boundaries of time and place and in so doing has made learning available to a greater number of people at a lower cost to both themselves and the educational institution. In the process, it has given control to the learners. The following section describes how flexibility and interactivity contribute to autonomy in e-learning.

### **2.15 Autonomous learning**

The following section contends that while autonomy is the ultimate goal of effective pedagogy, flexibility and interactivity are two essential components of it.

Flexibility implies that, from the first moment when the learner sits in front of a computer, he/ she becomes a subject who wishes to learn in time that suits him/her, and this autonomy continues until the end moment. Abdulaziz (2008) states that all of the learners' activities are practical actions in the implementation process of personalization and autonomous learning. E-learning also supports the idea of continuity in learning and the transfer of learning outside the walls of the university, so it is clear that there is a link between e-learning and self learning, each one being essential to the other. Flexibility in learning is, therefore, on its way to becoming autonomy.

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Interactivity ensures that the learner has the ability to participate actively with the content. Such ability is the result of being able to practice and to decide independently what is useful for him/her. In other words, it draws attention to individual needs and takes into account learner capacity and pace to achieve the objectives, enabling individuals to reach a high degree of proficiency (Almosa and Almubarak, 2005). Thus the instructor's role in this kind of learning is to train learners to search, and to operate as their own guides, directors, and observers. Research shows that ICT reformulates education to focus on learners and to absorb and use the existing technology. Such use can only be achieved through self-learning because individuals are different in their interaction with technology. E-learning has contributed to the strengthening of individualization strategies and to designing learning to meet each learner's needs (Alsalem, 2004).

Undoubtedly, the primary objective of education is the composition of the individual in all aspects of personal development. This is also represented as the individual learning according to his/her needs and his/her past experience. Thus, education should deal with each learner individually to give him/her opportunities to obtain the maximum in less time with less effort. Therefore, optimal educational opportunity calls for autonomous learning. Drew and Bingham (2001) define "autonomous learning" as "a school of education which sees learners as individuals who can and should be autonomous i.e. be responsible for their own learning climate" (p.206). So autonomous learning means having independence in learning, without continuous supervision and help from instructors (Fazey and Fazey, 2001).

The foregoing argument shows flexibility and interactivity as two necessary conditions for autonomous learning and the foregoing history of e-learning and applications demonstrate that it offers to educational institutions the ability to meet their learners' needs, at any time,

in any place and at any pace. The present study is an examination of the extent of the effectiveness of these procedures studied in two universities up to the time of writing.

Having explained autonomous learning as flexibility and interactivity, the meaning of “effectiveness” will be examined in the following section.

### 2.16 Effectiveness

Evaluating the effectiveness of any project is considered the most significant issue. Oatley and Nundy (1996) exemplify effectiveness “as a general term covering concepts such as emotion, mood, attitude and values” (p.285). The meaning of effectiveness is the achievement of goals. As Reeves and Hedberg (2003) stated effectiveness is used “to determine whether the interactive learning system accomplishes its objectives within the immediate or short-term context of its implementation” (p.61). It is this definition of the term that is used in this study. It leads to such questions as “Does e-learning achieve its goals to accomplish flexibility interactivity and usability?” and “Does e-learning provide the ease of use, the ease of access, that enables learners to interact with the content and instructors, and his colleagues?” In this research e-learning’s effectiveness is evaluated by developing understanding of the learner's perspectives of their ability to learn autonomously in any time, any place and at any pace. In the end this may indicate the feasibility of e-learning in the long run.

In short, if the learner has the ability to learn autonomously through e-learning at any time, anywhere, any pace and to interact positively with content and instructors and other learners. E-learning can be said to be successful and effective. Having established this, it is worthwhile knowing what “evaluation” is.

### 2.17 Evaluation

Patton (1986) identified evaluation as “the systematic collection of information about the activities, characteristics, and outcomes of a program for use by specific people to reduce uncertainties, improve effectiveness, and make decisions with regard to what those programs are doing and effecting” (p.14). Morrison (1993) applied such information to “specific issues upon which judgments are based [that] inform which decisions for action [would be]... taken” (p.2). “Evaluation” may denote a discovery of student perceptions about an e-learning course’s usability) Phillips, 2002). Schneiderman (1987) further stated that it is about the extent to which users learn through high speed performance, with low mistakes, whilst achieving satisfaction and retention. Mertens (2009) identified evaluation as “an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, value, and merit, worth, significance or quality of a program, product, person, policy, proposal, or plan” (p.49). Hadley and Mitchell, (1995) define evaluation as “applied research carried out to make or support decisions regarding one or more service programs” (p.48).

It is necessary to evaluate the effectiveness of e-learning at universities in order to identify the realities of e-learning, to support the positives and avoid the negatives, thus helping to attract efforts and money to achieve the goals of e-learning. Leung (2003) emphasized the importance of the assurance that comes from evaluating the effectiveness of e-learning before converting to it on a large scale. This evaluation must lead to development and the development must be based on the evaluation’s result (Reeves and Hedberg, 2003).

The purpose of evaluating e-learning, as mentioned by Reeves and Hedberg (2003), serves “the primary aim of evaluation...the collection of information to support day-to-day decision making’ (p.3). So evaluation is a means of judging, improving and developing

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educational programs. Actually, there are many reasons behind the need to evaluate e-learning which are generally the same reasons for evaluating any other activity. For example, as Sawaan (2005) mentioned, evaluation is intended to satisfy the curiosity of the learners and calm their fears and to give a clear picture to experts, designers, developers and leaders about how to improve the quality and effectiveness of educational software. It is also to contribute to activities related to the development of strategies and decisions. In practical terms, Dempster (2008) identified the following purposes of evaluating e-learning: to judge the quality of practice and the academic quality of teaching, to justify investment in e-learning, to develop and improve the performance of the individual packages and participants. These pragmatic goals were expanded by Stufflebeam (2001) to include future planning, not only by providing information to take decisions but also by assisting in judging and developing the value of the programs and improving policies. Shobeli (1984) mentioned that the ethical purposes of evaluation were to determine the feasibility of programs, to justify the effort, money and time given to e learning and to identify the impact of programs. Further, Shobeli stated that evaluation aimed to collect data that facilitated decisions about the continual development or discontinuation of various software packages. This ability to rationalize the investment in e-learning through evaluation was endorsed by Horton (2001). Over all, Reeves and Hedberg (2003) pointed up that “the overall purpose of effectiveness evaluation is to determine whether e-learning accomplishes its objectives within the immediate or short-term context of its implementation” (p.173).

Evaluation can be of many types. According to Shobeli (1984) it can be classified into four types identified by the stages of the program's implementation at which each occurs. The first stage is initial evaluation, which is conducted before starting the implementation of a program. This aims to provide basic data before starting the application. The second stage

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is formative evaluations and can be conducted several times over, while implementing the program, to develop and improve it. The third stage, summative evaluation, is conducted at the end of implementing the program and is aimed at making a decision regarding the continuity of its use. The fourth is follow-up evaluation, used to identify the long-range effects of a program, and whether it is still appropriate in the light of new developments. Such follow-up evaluation is not easy to achieve regarding the effectiveness of e-learning, but asking some questions and interviewing students retrospectively may show how effective it is in the long term.

So, evaluation can be conducted in several stages, during the implementation of e-learning, in order to improve its effectiveness and, by on-going evaluation, to improve e-learning during its development. Therefore, formative evaluation seemed to be the most useful one for this study of e-learning. There is extensive debate about what means should be used to evaluate projects, whether this is to be done formatively or summatively. Quantitative or qualitative methods, experimental studies or surveys are controversial in the evaluation field. As Mandinach (2005) stated “the evaluation of e-learning, just like its implementation, no doubt will be challenging and sometimes problematic, but potentially effective and informative” (p.1817). Because of this controversy about the best model, it is important to understand each approach’s limitations to ensure a valid formative result (Conole and Oliver, 2007).

In fact, there is no globally known standard of formative evaluation but those included below take general factors and considerations into account, for example functionality, usability and effectiveness. All these factors can be gauged by using such questions as, “Does the product work as it was designed to?” another question would be “Do the students use the program and do they learn from it or not?” and other variations on these themes

(Reeves and Hedberg, 2003). As part of an overview of relevant models, Payne (1994) offered a division of the existing evaluation models into four depending on their functions. He proposed: Management Models, Judicial Models, Anthropological Models and Consumer Models and, the diversity of models available were multiplied by Reeves and Hedberg's (2003) statement that there were many models which had been used. Amongst these were: Multiple Methods Evaluation Model, Experimental Evaluation Model, Patton's Qualitative Evaluation Model, and Fourth Generation Evaluation or Constructivist Model.

As we see above there are many evaluation models found in the literature, some of them dating back to the beginnings of the sixties of the last century. It is not the intent of this study to discuss them in detail, but rather to outline briefly the most famous models and to explain their relationship to this study. The following section proceeds to do this. Having arrived at this conclusion, the bulleted sections will consider the most appropriate evaluation models.

- **Kirkpatrick's model (Reaction, Learning, Behaviour and Results) (RLBR) and Phillips' model (Return on Investment) (ROI)**

Two models were developed chiefly for assessing the value of company training programs. Of these, the oldest and most famous is Kirkpatrick's. In 1975, Kirkpatrick identified four levels of evaluation. These four levels are still used by many researchers. The levels are: reaction, learning, behaviour and results (Kirkpatrick, 1998). Of these four levels, the closest to the present research is the first although "satisfaction" is a loaded term that has been replaced by an unbiased query on a Likert scale. "Behaviour" resonates with this study's self-rating of the learners' interactivity, functioning as a self- assessment.

Phillips extended this to form a framework of financial returns to analyse investment and profit information on fifth level. Applied to the data after the fourth level, this level enabled education organizations to compare the cost with benefits by answering the question of financial value (Phillips, 2000). Moreover, this model considered the needs of producers and investors. Companies can use those formulas to calculate the ROI of learning initiatives.

Two more recent models or frameworks in the literature are outlined below. Both models address the value of e-learning.

- **Stufflebeam's model (Context, Input, Process, and Product) (CIPP) and Levy's framework**

A model was developed in 1960 by Daniel Stufflebeam. It had four aspects: context, input, process, and product. Stufflebeam recommended evaluation in all four aspects in order to judge the value of the program and help decision-makers to answer questions such as "What should be done and how should it be done? Is it performing as planned?" (Stufflebeam, 2003). This informed the present research focus on the learners' perceptions of the process of e-learning, the goals of the study being similarly to facilitate decision making at university level.

Levy proposed combining the value of selected characteristics of e-learning and the satisfaction learners expressed about each to assess e-learning's effectiveness and he suggested this would present a clear picture about how to improve the effectiveness of e-learning. He used survey tools to elicit the learners' perceptions of the comparative importance of e-learning's characteristics. This was done on a value satisfaction grid, to allow learners to rate his collection of 48 significant characteristics. Examples of these characteristics were the quality of technical support, learning at any time of the day, access

to all courses from one area, availability of course content, amount of professor–student interaction, amount of interaction with classmates, and so on, all classified in four dimensions: technology and support, course, professor and learner. Indeed, he said that “e-learning is considered effective when learners perceive its characteristics as highly important and are highly satisfied by those same characteristics” (Levy, 2006, p.2). Nevertheless, his study is based on the previous assumption that e-learning is an optimal pedagogy and that its general effectiveness is already proven. The present study does not take the effectiveness of e-learning as a given. On the contrary, it asks questions to validate the technology and its pedagogical use whilst assessing its effectiveness. Having clarified the three terms on which this work was proposed: perception, effectiveness and evaluation, the following section will consider the relationship of the four main models to this research.

### **2.17.1 Explanation of these models’ relation to this study**

To begin with, the foregoing models were useful. The researcher benefited from them and built on them. Indeed, they helped and enriched this study in many ways including the identification of some essential characteristics of e-learning. However, none were fully comprehensive for a group of reasons explained below. The reasons fall into three categories which are: technological change, cultural diversity including inequality of development and the financial and time constraints of this study.

Some of the models described above, particularly the earliest one, appeared many years ago when the technology was in its infancy and its potential was not as it has since become. Not only has hardware changed but software has evolved rapidly and early examples are not compatible with more recent systems. Research suggests that every evaluation of e-learning is unique because of the intensity of change in both software and hardware and the circumstances of application, Therefore, any past evaluation model, though, successful, cannot be generalized to a more recent e-learning program, for a simple reason that each

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program is different in its goals, in the obstacles that it faces and in its particular structures. Moreover, the circumstances that may have led to success or failure in the past may have disappeared. Indeed, a very new feature may just have emerged which will solve some past obstacles or may cause previous failures to succeed. That is why Horton (2001) said “Only your evaluation can measure your success” (p.1).

The models were all designed in different countries, which did not compare with this study's setting in terms of culture, development and the current state of ICT applications. Technological change occurs at diverse paces from sector to sector, such that, in production, for example, it may be comparatively more advanced than it is in education at any one time. Furthermore the infrastructure to support the technology is of unequal reliability from country to country. In respect of such differences, some models refer to an ideal situation instead of to the reality. Furthermore, some models were designed to evaluate training programs, and some are for application in the private sectors. Some of the models confined the research to specific methods, either quantitative or qualitative. Moreover, most of them evaluated courses not whole programs. Indeed, before choosing a model for evaluation, it is important to try to know what were the university's goals when applying e-learning, whether educational or economic, to improve learning and instruction and increase accessibility, or for other reasons ( Piccoli et al. 2001).

The models are comprehensive modes of study that need more money and time to apply than is available for this research, for example their levels require separate applications at consecutive periods of time. The models use different instruments to collect the data, for example, the first three models (Kirkpatrick 1998, Phillips 2000 and Stufflebeam 2003) use one or more including tests (pre-/post-), performance, questionnaires, checklists, self-assessments, interviews, surveys, observations and control groups, while Levy's 2006

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framework uses a questionnaire and grid. In this study a questionnaire and a focus group interview were used. This study's framework is, to some extent, similar to Levy's framework such as in using e-learning's characteristics and similar dimensions. However, this study uses learners' perceptions of autonomy (flexibility, interactivity) while Levy's framework uses users' satisfaction and value to measure the effectiveness of e-learning.

This study adopts 38 characteristics, some suggested by the literature in the field, others unique to this study, but validated through analysis of learners' responses. The characteristics were appropriate to the universities and the country, Saudi Arabia, where the study was to be carried out. To evaluate the e-learning's effectiveness through the learners' perceptions, the most important characteristics concentrate on flexibility and interactivity, studied through four dimensions; autonomy, and interaction between learners and content, learners and instructors, learners and other learners. Uniquely included in the classification for this study are 16 characteristics. These are placed alongside 22 from related literature. Consequently, it seems appropriate to categorize the total number of 38 items in line with the four dimensions adopted for this study, autonomy being a category introduced to the field by this research. Whilst previous studies have introduced various ratings for each of the items previously applied, this study uses the Likert scale, implementing the full five points suggested for this tool. In this way a comprehensive measurement of flexibility and interactivity of e-learning has been achieved (Table 2.2).

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Table 2.2: Illustrating the 38 characteristics with their sources in the literature

No.	Characteristics	Example Sources
<b>Dimension 1. the ability to learn autonomously in e-learning</b>		
1	Personalized learning	
2	Learning anytime, anywhere.	Piccoli et al. 2001; Alferaihi , 2003; Levy, 2006; Alaugab, 2007
3	Learning at own pace.	Sawaan,2005
4	Presentation is suited to own learning style	Webster and Hackley,1997; Piccoli et al. 2001
5	Enabling reviews at any time.	
6	Presenting immediate feedback.	
7	Able to self-asses.	
8	Suitable technical support	Webster and Hackley, 1997; Levy, 2006
<b>Dimension 2. learner- content- interaction in e-learning</b>		
9	Easing the process of learning.	Sawaan, 2005
10	Encouragement to learn more.	
11	Increasing capacity.	
12	Increasing motivation	Sawaan, 2005; Alaugab, 2007
13	Increasing productivity.	
14	Helping to manage time and self discipline.	Alarfaj, 2001 ; Piccoli et al. 2001; Sawaan, 2005
15	Encouraging increasing duration of learning time.	
16	Preferring tasks and tests through e-learning tools.	Piccoli et al. 2001; Levy ,2006
17	Preferring obtaining score through e-learning tools.	
18	Better results in e-learning than traditional learning	Alarfaj, 2001; Alzamil, 2006
19	Meeting student needs.	
20	Meeting student expectations.	
21	Enjoying learning	Webster and Hackley ,1997 ; Levy,2006
22	Feeling more freedom of options	Webster and Hackley ,1997; Piccoli et al. 2001;Alferaihi ,2003; Levy ,2006
23	Increasing confidence.	Sawaa, 2005
24	Anticipating other courses by e-learning	Sawaan, 2005
<b>Dimension 3. learner-instructor- interaction in e-learning</b>		
25	Preferring communicating compared to face to face.	
26	Increasing communication with instructors	Webster and Hackley, 1997; Alferaihi ,2003; Levy ,2006
27	Building productive relationships. with instructors	Webster and Hackley, 1997; Piccoli et al. 2001;Alferaihi, 2003
28	Easing discussion with instructors	Alferaihi, 2003
29	Encouraging discussion with instructors	Sawaan, 2005
30	Enjoying contacting instructors	
31	Receiving more attention from instructors	Sawaan, (2005
<b>Dimension 4. learner-learner- interaction in e-learning</b>		
32	Preferring communication compared to face to face	
33	Increasing the communication with other learners	Webster and Hackley's ,1997; Alarfaj, 2001; Levy ,2006
34	Building productive relationships with other learners	Webster and Hackley's, 1997; Piccoli et al. 2001
35	Easing discussion with other learners	
36	Encouraging participation in discussion with other learners	Sawaan, 2005
37	Enjoying contacting other learners	
38	Increasing cooperation with other learners.	Sawaan, 2005

The above table acknowledges the various writers who have contributed to this complete classification.

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To conclude, the major representation of e-learning is “any time, anywhere, any pace” (Holmes and Gardner, 2006; Zeitoun, 2008). The other main distinguishing feature of e-learning is its interactivity, where it uses two or multiple ways to exchange information, and in turn supports collaboration (Allan, 2008). So e-learning should be categorized in terms of the interactions between all parties: learner to learner; learner to instructor; and learner to resources (Phillips, 2004). In addition, networks and interaction are the main distinction between e-learning and computer-based learning (Cross, 2004).

These distinctions are the key to this study which adopted two important concepts from the related literature: "flexibility" and "interactivity". Together, these two concepts summarize the difference between traditional delivery and e-learning. Flexibility is a newly selected term used to refer to “any time, anywhere, any pace” with the addition of choice of learning styles, availability of reviews at any time, immediate feedback including the facility to self-assess and the technical support required for the maintenance of these features. It represents an innovative situation in which autonomous learning can take place. The expansion of the concept to include the additions listed above was done to up-date the framework in respect of developments in learning theory, technological features and formative experience at educational locations where e-learning has been introduced. Interactivity is a concept that has been noted as an important contribution to pedagogy made possible by technology (Allan, 2008; Phillips, 2004; Cross, 2004). The range of interaction available to e-learners was grouped together as a single concept of interactivity and expanded for this study such that the prominence accorded to it by other writers was endorsed in this research. The additions were a comparison of e-contact with face-to-face contact, and ease and enjoyment of communication.

It follows from this explanation of the two key concepts, flexibility and interactivity, that autonomy is a third and overarching concept which results from the other two. If flexibility

of time, place, pace and style is self-managed in response to reviews, feedback and self-assessment with enabling technical support, learners necessarily practice autonomy. Furthermore, if within this autonomous situation, they manage multiple interactions between their instructors, other learners and the content and adjust their learning in the light of these interactions; their autonomous learning has a capacity for change that is unattainable in courses structured for groups or classes. It is for this reason the flexibility and interactivity are said to be the two sides of the coin of autonomy.

Having discussed the existing frameworks and their relationship to this study and having explained the framework applied to the present research, the scope of evaluations of e-learning will be outlined.

### **2.17.2 Aspects to be covered during e-learning evaluation**

This section considers: the infrastructure, tools, systems, applications, positives and negatives compared with other systems, the impact of positive and negative consequences on stakeholders' support, what constraints exist and, also, evaluation of the achievement levels of learners before and after application. The impact of e-learning on the institution and the community, socially, intellectually and behaviourally, and the impact of e-learning in improving the administrative process relating to savings in time and effort are also of interest.

Khan (2005) suggested that the evaluation dimensions of e-learning included evaluating learners and learning and the teaching environments and focusing on input, individuals, processes and outputs. Although, important questions dominated the field of ICT in education, for example its vocational, pedagogical and societal impact (Wellington, 2005), it was the quality of learning, through e-learning that demanded close consideration.

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Dempster (2008) mentioned that evaluation should cover the use of ICT, its effectiveness, the materials and sources, skills, and feasibility and those evaluations of effectiveness could include one or all of the following areas: input, processes, and output. Hall and Hall (2004) also recognised the importance of: content evaluation under the headings of design, interaction, leadership, motivation, methods, assessment, enthusiasm and interactivity, storing, instructor evaluation (attitude and competence). They also advocated learner evaluation, involving performance objectives of knowledge, skills and competence and implementation evaluation which assessed the roles of the instructors and learners and their ability to use the programs, together with the constraints and barriers perceived by the learners.

These multiple and various concerns need to be assimilated and condensed as demonstrated in the foregoing suggestions of three inclusive concepts in order that the evaluation of e-learning could progress in a rigorous manner to address up-dated conditions created by technological developments and their application in particular settings.

These practices and procedures promote adaptive responses and appropriate initiatives in their users which, though reflecting the principles of the society and the local cultural base, combine in the learner's reflexivity to indicate levels of satisfaction that attach themselves as "perceptions" to the e-learning experience. It is incumbent upon researchers to classify these responses according to the objectives of the e-learning program (positive perceptions) or according to its evidenced short-comings (negative perceptions). This will be examined in more depth below.

### 2.18 Perceptions of learning

The Oxford English Dictionary defines ‘perception’ as “the process of becoming aware or conscious of a thing or things in general; the state of being aware; consciousness; understanding” (OED Online). Perceptions in this study therefore concern students’ conscious views and understanding of learning, based on their experiences and knowledge.

A phenomenological account of perceptions considers that people experience their world through the act of knowing. They act according to their understanding of the perceptions they hold. Perceptions are therefore based on full extent of an individual’s experience and not just on parts of it (Drucker, 1967; Hall, 1976; Moustakas, 1994). Multiple layers of knowledge and experiences emerge from each perception by connecting feelings and images and by bringing past meanings and qualities into the present (Moustakas, 1994, p. 53). Perceptions are therefore relative to previous experience and knowledge.

From this standpoint perceptions are neither objective nor purely interpretive. Perceptions provide individuals with the background of knowledge which guides their interpretation and action. They consciously assign meaning to everything they encounter in an effort to understand the world around them. They make a conscious effort to assign meaning to the events world that they experience which rests in their perceptions. As a result, realization of perceptions is not separable from the human mind and consciousness (Merleau-Ponty, 1962; Moustakas, 1994).

Merleau-Ponty (1962) defines phenomenology as a study of finding essences of perceptions or consciousness (p. vii). He believes that phenomenology is descriptive and not explanatory or analytical. He adds that perception is not a science of the world; it is not

even an act, a deliberate taking up of a position; it is the background from which all acts stand out and is presupposed by them (p. xi).

When students positively evaluate their courses or the teaching they have experienced there is an assumption that these perceptions reflect their perceptions of quality of their learning. In turn there then is a further assumption that these perceptions of quality are related to other kinds of learning outcomes, such as attainment. This assumption underlies the validity of students' perceptions and evaluations of teaching, of teaching programmes and of teachers.

A large number of studies have investigated the extent to which differences in attainment outcomes such as examination scores or final grades correspond with ratings from students' perceptions of teaching. Meta-analyses of these studies have concluded that overall ratings of teachers or courses have a significant, if modest, correlation with summative assessments, typically around .50 (Cohen, 1981, 1986; Feldman, 1989). Other ratings, such as for perceptions of teacher-student interactions or of course difficulty, typically correlate more modestly with final grades or scores.

Although summative outcomes tend to be the main criterion for establishing the validity of students' evaluations, such scores actually reflect only a limited view of learning outcomes. More comprehensive indicators of learning more widely conceived go beyond such scores or grades, which tend to reflect fairly narrowly defined course or programme objectives. Wider indicators might encompass students' perceptions of their growing interest in the subject, their critical thinking skills perhaps, or interpersonal outcomes such as cooperative abilities or even intrapersonal outcomes such as self-awareness and understanding (Koon and Murray, 1995).

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Actually, one study found that students' perceptions of learning in a course correlated more highly with student ratings of instruction than the differences in pre- and post-test scores (O'Connell and Dickinson, 1993). Ryan and Harrison (1995) and Cashin and Downey (1992, 1999) similarly report that students' perceptions of learning were highly correlated with their overall ratings of teaching effectiveness.

Another advantage of using students' perceptions of learning as a useful evaluative tool over scores or grades is that the latter are limited to courses that use a common final assessment. Students' perceptions of learning can be studied across a wide variety of courses, thereby making the results more comparable. There is also evidence that student perceptions are influential on teachers' self-concept (Penny and Coe, 2004, p. 242).

In this study students' perceptions of e-learning are therefore operationalised as their views or beliefs about the learning they have experienced, but acknowledging the complexity of the idea or the construct outlined in this section. Students' perceptions of learning in general, or e-learning in particular are, of course, only one dimension of understanding learning and its overall effectiveness. However they form an important part of evaluating learning in general and, for this study, e-learning in Saudi Arabia as it undergoes significant expansion.

Perception is an important dimension in behavioural studies where it determines the position of the individual towards a particular topic. "Perception measures" can be applied in statistical or verbal forms to reveal responses that may not normally be articulated in a classifiable format. For the purposes of comparison and analysis, a tested means of recording responses offers results that can transfer to numerical application so that data can be evaluated. Although perceptions amount to learners' opinions regarding aspects of their

experience, their insights can thus be used to describe the effectiveness of educational input (Alomari, 2002; Sawaan, 2005).

Some of the related studies use examination scores to evaluate e-learning but they have been found to give an incomplete picture because the measure they offer is confined to production of knowledge not processes of attaining it (Koon and Murray, 1995). O'Connell and Dickinson (1993) found that where perceptions were used instead of exam scores, the data provided more information about learners' responses to the procedures by which knowledge was gained. Furthermore, Ryan and Harrison (1995) and Cashin and Downey (1992, 1999) were able to rate the effectiveness of teaching by correlating it with students' perceptions of their learning experience.

In fact the definition of perception is complex and overlaps with other terms. It has more than one meaning and concept. Some researchers explained it as encapsulating someone's total picture of reality (Lindsay and Norman, 1977). Hamlyn (1957) defined perception as "an interaction between the organism and the environment" (p.6). According to Longman's dictionary (2004), perception is "the way you understand something and what you believe about what it is like."

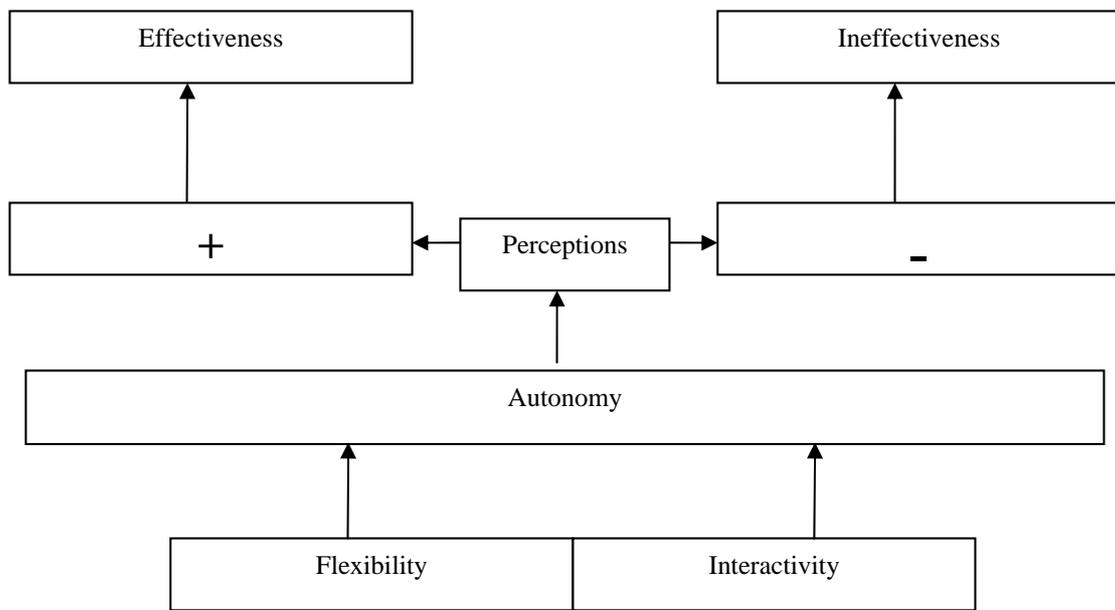
In this study perception means the learner's opinion about the e-learning experience. Perception is being used as a tool to penetrate the complexity and multiplicity of the e-learning process. Because it is hard to control all components, some of which may need experimental and long term observation in the future, there is a lack of fixed standards to evaluate e-learning. In addition, perception could sometimes be more important than reality, as it is the basis of many vital decisions. Moreover, learners are the most important component in educational settings and they are the main stakeholders. This is particularly

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evidenced when they are applying and using ICT because of the freedom it allows each individual to study in their own time, place and pace. Therefore, each learner's point of view is extremely important and has been considered the best way to evaluate the effectiveness of e-learning (O'Malley and McCraw, 1999). As Reeves and Hedberg (2003) mentioned "the learner's experience of e-learning usability is an important indicator of its quality" (p.145).

To conclude, although the evaluation tools and models are many, a suitable model for a study can be developed from the foregoing range of precedents with the addition of critical new elements. The precedents considered above related to the major issue of evaluating the effectiveness of e-learning. The demand is for the researcher to redesign a model to fit new circumstances so that the evaluation can be applied by standard methods to an evolving reality in diverse educational settings. In order to achieve this, the concept of autonomy is proposed as the desired result of e-learning's capacity to offer flexible and interactive learning. Ultimately, the evaluation must state whether e-learning has attained its goals and whether its software and hardware, location, budget and other factors can maintain them. If the learner has the ability to learn autonomously through e-learning, any time, anywhere, at any pace, and to interact positively with the content, instructors and other learners, e-learning can be said to be successful and effective in achieving its goals (see Figure 2.6).

Figure 2.6: Evaluating E-learning's effectiveness



Some existing studies have examined perception and trends to evaluate the effectiveness and success of e-learning. Comments on this related research follow.

### 2.19 Research related to the evaluation of e-learning

The following section summarizes related research and points up some difficulties that constrain the generalization of studies of e-learning and identifies some previous studies of relevance to the current research.

ICT in Education is one of the most critical and important issues of recent years and it can be approached and studied from many angles. It can be viewed from the perspective of learning, teaching, administration, technology, or from its social, political or economic impacts or as an investment. Moreover each perspective has more than one dimension which can be studied. Further, there is an exclusive element in e-learning that is not present in other modern inventions, which is constant novelty, such that one can almost say that novelties occur all the time. This is expected to continue in future years, because at very short intervals new innovations are added and applied in e-learning. In fact, the technology

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used in e-learning is not something that was invented once, on top of which some features were added to it but frequently there is a new development that more or less changes the totality, not just by way of improvements such as in car or plane technology, but some fundamental change that can affect the goals of the invention and provide new features and new opportunities. So it can be stated, similarly, that every research relating to e-learning is new, unique from all others, additionally, that each piece of research applies to different software and hardware.

This study's main goal is to evaluate the effectiveness of e-learning using students' perceptions as the most powerful indicators for proof of effective e-learning. Generally, there are a good number of studies on e-learning emerging from more than one country and more than one language, but the research related to the theme of the current study, to the researcher's knowledge, is limited.

In fact, a number of studies were considered, but those that fell in the following categories, were ruled out:

- those applied in a specific or particular situation and with particular software or specializing in a definite area like the private sector, vocational training, health sector, industrial sector (there is no need to explain the difference between those areas and the educational field),
- any studies carried out in general education (pre-university) levels of education,
- any studies that aimed to design evaluation models or to develop or put forward suggestions for e-learning programs (although the researcher used some of these studies in the thesis i.e. for the theoretical framework),
- any studies carried out by businessmen and investors which were interested in the income and economic investment from the use of e-learning more than the

educational return or any study aiming to evaluate the specific educational program of a designer or developer, which are often made by the producers of those programs,

- any studies just relating in small part to this study e.g. a study that mentioned in its results about such issues as negatives or positives or motivation. (These issues will be picked up in the discussion chapter).

Following these criteria, 22 previous studies relevant, to the current theme remained. These studies have been applied in a number of countries (the United States, the United Kingdom, France, Australia, Sweden, Saudi Arabia, Hong Kong, China, Jordan, Malaysia, Iran, and Kenya). The following is a summary of these studies including the title of the study and the theme and the most important results which have to do with the present study.

In fact, these studies can be classified in several ways either based on their methodology, date, topic, place of origin, or their language. The researcher classified them based on their dates from newest to oldest and in accordance with either effectiveness and success or perception and trends. The following section shows the name and place of each piece of research giving its title, date, location, sample size and main findings whilst a discussion comparing the methods used for each of these 22 studies, mentioned in relation to the present research, will be found in a subsequent section.

### **2.19.1 Research that evaluated e-learning's effectiveness and its success.**

The term “effectiveness” is used in this study to mean the achievement of goals. Thus it points to the feasibility of e-learning. Eight pieces of research that queried this are considered here.

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These eight related studies focused, at least partially, on the effectiveness of e-learning and are tabulated below (Table 2.3). Three of the studies found that learners were able to control their learning and be more independent as e-learners. Two studies stressed the need for technical support to ensure a positive result. Some significant variables were found to correlate with a positive attitude to e-learning, principally previous e-learning experience and ICT skills. Uncertainty was reflected in the extent of learners' satisfaction with interactive features of e-learning whilst two studies suggested that effectiveness was comparable whether learning took place by traditional delivery or through e-learning.

Table 2.3: Summary of literature related to e-learning effectiveness

No.	Name and place	sample	Title and main findings
1	Williams (2006) (USA)	10 previous studies reviewed	"An historical investigation of the perceived effectiveness of distance learning in higher education" useful for highly motivated and self-directed learners but at high cost.
2	Omwenga & Rodrigues (2006) (Kenya)	2 groups	"Towards an education evaluation framework: synchronous and asynchronous" practicable and supportive of independent learning, political factors important.
3	Drillon et al. (2005) (France)	97 students' perceptions	"Evaluating the effectiveness of an e-learning system: an exploratory study" 50% students satisfied with independence and control of own learning, little change to motivation, interactive features requested.
4	Leung (2003) (Hong Kong)	38 e-learners, 45 traditional	"Evaluating the effectiveness of e-learning," experimental study, results showed that the effectiveness of delivery was the same.
5	Chan, et al. (2003) (Hong Kong)	113 students	"A framework for evaluation of learning effectiveness in online courses" user friendly and easy to access, effective and organised for better learning although content functions more effective than communication functions, and offered autonomous learning with flexibility.
6	Piccoli, at al (2001) (USA)	146 experimental	"Web-based virtual learning environments: a research framework and a preliminary assessment of effectiveness in basic IT skills training" no significant differences in score between the two methods, more ICT skills but less satisfaction expressed by e-learners than by traditional methods.
7	Whittington (2000) (Scotland)	200 learners, staff and visitors	"Evaluating three years' use of a virtual university", the strengths and deficits in web delivered instruction, goals achieved, useful and easy to use, some problems such as downloading, need for technical support but general acceptance of project.
8	Volery and Lord (2000) (Australia)	47 students	"Critical success factors in online education" Factors affecting success: internet useful learning tool subject to technology's ease of use and navigation, good-quality design and interactive features, instructors' perceptions of students and efficient use and interaction with technology and the students' previous experience of ICT.

These eight studies contributed to an understanding of e-learning's effectiveness by using perceptions and attitudes as well as scores to establish a positive reaction amongst e-learners. This was affected by such variables as age, previous exposure to e-learning and ICT skills. Some of these variables were adopted for the present study and its focus on effectiveness benefited from considering the strengths and weaknesses of their research methods alongside an examination of available frameworks and theoretical models. In short, though previous research into the effectiveness opened the inquiry and offered some precedents, the present study attempts to address the issue more rigorously.

The foregoing section outlined studies related to the evaluation of the effectiveness of e-learning. Others that used perceptions and trends are summarized below.

### **2.19.2 Research that examined perceptions and trends**

Perceptions were used to determine learners' positions towards e-learning in a number of studies. This was sometimes defined as attitude, a closely related term, taken in the review of literature to be equally relevant as an assessment of e-learning from the learners' points of view. Thirteen studies were found that applied these concepts to e-learning and a similar study used student achievement as its main criterion. These fourteen studies are found below in the Table 2.4.

Five of the fourteen studies reported a positive attitude to e-learning. In another, some slight differences were noted correlating with the learners' geographical and economic circumstances whilst other significant variables such as subject specialization were noted throughout the literature. There was little difference between genders, only one study noting a stronger response among male than female learners whilst another found female learners more positive. However, perceptions of the importance of technological efficiency

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and maintenance were common and skilled use of ICT was a significant variable. Learners expressed satisfaction about their use of the internet and their ease of communication in e-learning, although one study concluded that this was not more than in traditional settings. Alzamil (2006) found that students who were not studying full-time perceived more barriers. Nevertheless, in an experimental study, the group exposed to e-learning had a more positive feeling about their experience than the control group.

Table 2.4: Summary of literature related to perceptions and trends

No	Name and place	Sample	Title and main findings
1	Yaghoubi et al. (2008) (Iran)	110 learners' perceptions	"Virtual students' perceptions of e-learning in Iran." Positive attitude but varied responses to e-learning's efficiency and access to internet and the use of technology.
2	Alaugab (2007) (KSA)	310 students and faculty	"Benefits, barriers, and attitudes of Saudi Arabian female faculty and students towards online learning in higher education" positive attitudes to online instruction correlated with ICT and internet experience, its benefit and barriers, students more positive than faculty,
3	Alzamil (2006) (KSA)	265students	"Students' perceptions towards e-Learning at the GOTEVOT and the Arab Open University" mastering the use of technology helped learners interact with e-learning, age rather than different levels of courses affected interaction as did computer specialism, students not studying full-time perceived more barriers.
4	Sawaan (2005) (Jordan)	805 students' attitudes	Attitudes of the Hashemite University students towards e-learning and the effect of some selected variables on these attitudes" found positive attitudes with significant differences between arts and science students and experienced users of ICT but not of previous web-based courses
5	Alhelih (2004) (Jordan)	60 divided into experiment and control	'The effect of e-learning on the achievement in instructional technology course in comparison with the conventional method,' score differences in favour of e-learning
6	Alferaihi (2003) (KSA)	326 students' perceptions	"The perception of undergraduate students toward utilizing online courses at King Saud University, Riyadh, Saudi Arabia." Students' perceptions slightly positive, showing some correlation with variables of geographic location or economic situation, negatives included weak social links.
7	Vonderwell, (2003) (USA)	22 students' documents	"An examination of asynchronous communication: experiences and perspectives of students in an online course: a case study." reviewed emails and discussion boards, analyzed them and did interviews, synchronous communication eased and deepened but not more than traditional methods, results equal, more satisfaction if experienced with ICT.
8	Hong et al (2003) (Malaysia)	88 students' attitudes	"Students' attitudes toward the use of the internet for learning" Positive towards internet in education, not differences in between females and males nor those who got high or low scores but Engineering and Technological Sciences students rated e-learning more highly than the students of human development.
9	Keller & Cermerud (2002) (Sweden)	150 students' perceptions	"Students' perceptions of e-learning in university education" Shows university's strategies on implementing e-learning more important to perceptions than personal variables; students who had experience preferred off-campus studies and immediate feedback valued.
10	Li & Kirkup(2002) (China & UK)	220 China, 245 UK,	"The internet: producing or transforming culture and gender?" No difference in the rate of ICT use between the genders in either country, both cultures indicating preference for studying on the internet, although males more positive perceptions than females. But less gender difference in Chinese than in UK students.
11	Alarfaj (2001) (KSA)	450 students' perceptions	"The perceptions of college students in Saudi Arabia towards distance web-based instruction." The pros and cons of e-learning, generally positive perceptions but technical problems and doubted about applicability to all subjects, isolation and wasted time and cost noted but possession of the internet at home affected perceptions positively.
12	Sanders and Morrison-Shetlar (2001) (USA)	200 students	"Student attitudes toward web-enhanced instruction in an Introductory Biology Course" Attitudes positive to website of the subject which enabled them to interact and cooperate with their colleagues outside a classroom, females' attitudes more favourable than males'.
13	Duggan, et al. (2001) (USA)	188 students	"Measuring Student Attitudes toward educational use of the internet" preferential attitudes to the educational use of the internet correlated with frequency of tracking good educational sites and peer group exchange of information.
14	Scott et al. (1999) (USA)	14 experimental, 17 control	"The effects of internet-based instruction on student learning" No difference between the scores of the two groups but the experimental group had a more positive feeling about their experience.

The foregoing studies used perceptions, attitudes or attainment to establish the learners' opinions about e-learning. This study contends that perception can be used to penetrate the complexity and multiplicity of the e-learning process. These studies have pioneered the use of perception and its related concept of attitudes for this purpose.

The foregoing two sections have pointed to related research in the field of e-learning. Their location, sample and main findings have been summarized and their importance to the present study has been suggested. However, constraints and limitations in the methods used for such studies are an important consideration and the following section discusses sampling and methods in more detail so that the relation of these 22 studies to the present research can be further explored.

### **2.19.3 Comments on the methods used in related research**

Through a review of previous studies it is clear that there is consensus on the importance of ICT in higher educational institutions. What is problematic is how best to evaluate its effectiveness. The following section is a methodological examination of the 22 pieces of research introduced above with some comment about how they relate to the present study.

Previous studies have used a variety of methodological approaches to achieve their goals, including descriptive approaches (Alferaihi, 2003, Vonderwell, 2003, Hong et al. 2003, Sawaan, 2005, Alzamil, 2006 and Yaghoubi, et al. 2008) and experimental as in other studies (Leung, 2003, Scott et al. 1999, Piccoli et al. 2001, Alhelih, 2004). An example of the historical analytical approach was Williams (2006) and the comparative approach was represented by Li and Kirkup (2002). A case study was offered by Chan et al. (2003) and in Omwenga and Rodrigues' studies (2006) the researchers collected data using a variety of tools including questionnaires, interviews and document analysis. Previous studies were also applied to members of a variety of samples: many of them students but some faculty,

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staff and visitors as in Drillon et al. (2005) and Whittington, (2000). The SPSS Statistical software was used in the data analysis.

Like previous studies, this study samples higher education students. Though some reflect the experience of both genders, the present study complements that of Alaugab (2007) by focusing on one gender alone. This study is applied on males only for reasons stated in Chapter 1 (p.16). Other comparable features with previous studies include its central focus on the use of computer with its software and on the internet in higher education. The current study differs in the methodology used to collect the data. Though the study also takes the descriptive approach, it used mixed methods while previous studies variously used experimental, historical or comparative methods. To avoid some omissions which may have occurred in some previous studies, this study introduced four dimensions and investigated them by questionnaire and in a focus group interview. To account for variables the research used tick boxes adopting some ideas from previous research but including the possible influence of a respondent's specialty (art, science) on the individual's use of the internet and avoiding the conflation, noted in some studies, of use of the computer and the internet (Alarfaj, 2001).

Some of the studies reviewed above overlooked the differences between non-accredited and accredited on-line courses, the former being available to visitors and other adults who may have been included in the studies. Whereas the present research is confined to undergraduate learners in required courses. On the other hand, some studies have targeted particular colleges exclusively, which affected the potential generalisation of the result. In terms of the samples, in some studies there were two issues. The first one was non-random sampling which did not guarantee representation for all members of the total population. The other was the small number in the sample, compounded by the small size of the ratings scale that made it difficult to accurately represent all aspects of perception as in Drillon et

al. (2005), Leung (2003), Volery and Lord (2000) and Hong et al. (2003). This is a common setback, not only here but in most research in the Social Sciences, making bias difficult to avoid. Similarly classic is the problem of a researcher's personal impact during the collection of data, in particular, during the interviews and whilst analyzing data. Indeed, the lack of rigour, especially in experimental studies makes it difficult to generalize the results because it is impossible to manage all the differences between control and experimental groups. Parameters such as the curriculum, and instructors, tools, awareness, experience and others are not subject to experimental control. Thus, generally, some experimental studies lack validity.

In addition to non-representative samples, some of the 22 studies examined learners in non-representative courses, whose selected designs and features varied too much for reliable comparison from one course to another (Sanders and Morrison-Shetlar, 2001). Dating also affected some studies due to the developments of e-learning from which a great deal of new features have emerged. As a result, some studies targeted a non-representative type of e-learning, such as early distance learning or adjunct learning. Despite having "e-learning" in the title, they refer to very different software and, currently, new features are available which unquestionably affect generalising from the results of earlier studies such as Duggan, et al. (2001), Scott et al. (1999), Whittington (2000), and Sanders and Morrison-Shetlar (2001). For the same reason it is not possible to safeguard the relevance of the present study from the effect of technological change.

Overall, previous studies focused on multiple aspects of e-learning but neglected to define "effectiveness" as it applies to e-learning, involving the aspects of flexibility and interactivity which are very important to the success of e-learning projects. Contrarily, the current study aims to evaluate the learner's ability to learn autonomously. In this way the

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study differs from previous studies as no study could be found that evaluated the student's ability to learn autonomously through e-learning, taking account of both e-learning's flexibility, and its three way interactive facility, with the content, instructors and colleagues. In the present study flexibility and interactivity are seen as joint indicators of the effectiveness of e-learning as a distinct pedagogy from traditional classroom teaching. The study also considers some variables that might affect the learner's engagement with e-learning.

The researcher believes that this study may form a guide to future studies in this area. Systematic and up to date studies on the evaluation of the effectiveness of e-learning are few in English and almost non-existent in the other languages which gives novelty and importance to the present study. The researcher hopes that this study will help to open effectiveness of e-learning to further research. It must be emphasised that generalizing from the results of such studies is difficult for one main reason. This is that, unlike Saudi Arabia, the developments of e-learning that were researched often occurred in single universities without unifying guidelines whether national or regional. This study importantly differs, because of its context where cultural and economic conditions support a centralised approach to innovative education and provision is designed to address a great diversity of social and demographic characteristics. Stemming from wide spread commercial interest in the development of ICT and the popular use of the technology for entertainment purposes, the Kingdom of Saudi Arabia has shown governmental and academic interest in the phenomenon relatively recently. This provided a dynamic rationale for the present study, since the debate is taking place specifically about the feasibility and effectiveness of e-learning. Scepticism of its educational effectiveness allows queries about the value of releasing huge budgets for e-learning. This study hopes to be part of the answer to the effectiveness of e-learning.

The foregoing discussions of the site of the research and the measures used in related research to accomplish similar projects helped to refine the problem this research addresses. The following section will state the central problem of the study and its questions and purposes

### **2.20 The problem of the study and its rationale**

Recently, many universities have sought to introduce e-learning systems. The rationale behind such innovations varies from case to case. This could be explained either as imitation of others, or to appear up to date, or to meet the needs of increasing numbers of students, or to fill the lack of lecturers, and other reasons exist that are too numerous to mention. However, frequently, this innovation at a university has not been accompanied by an evaluation of e-learning's effectiveness. Indeed, such evaluative studies in the area of e-learning's effectiveness are few and rare, especially in the Arab world, and in Saudi Arabia in particular.

Nevertheless, in view of the increasing trend towards introducing e-learning in universities, an evaluation of the effectiveness of this type of learning is necessary. Albeit, the study was not commissioned by either university or by any of the suppliers of hardware and software who had vested interests in e-learning, it was proposed as an inquiry into learner satisfaction and it aimed to estimate the value attached to e-learning by the learners who were actively involved in it. Therefore, it was the aim of this study to evaluate the effectiveness of e-learning through current learners' perceptions. In short, it was proposed as an independent academic inquiry coming to fill the gap in this field and as a response to the queries of policy makers and decision takers and university officials, learners, and parents about the effectiveness of e-learning.

E-learning is still in early stages, worldwide, and government interest in it has increased in the Kingdom of Saudi Arabia, which is not far behind many countries where universities

have spent millions on the introduction of it. Of particular significance is its introduction in the institutions studied here, which were the earliest universities to be established so they were considered role models for all Saudi universities. Alhajeri (2005) reported that one of the earliest Saudi universities to connect to the internet was the University of King Saud and he added that the Imam University was not far behind. So these two universities were selected for study because of their early implementation of e-learning and the large percentage of their students using this method. Therefore, this study was a timely evaluation of the effectiveness of the e-learning experience.

Careful consideration was given to the title of this research. “Evaluating the effectiveness of the e-learning experience in some universities in Saudi Arabia from male students’ perceptions.” was selected because it indicated the type of research that was intended. It outlined the field of the research and it defined the particular demography of this study. Inclusion of the word “perceptions” showed the main focus of the approach that was taken.

The following section shows how the topic was applied, as questions, to a sample of the student population.

### **2.22 Research questions**

The interest of this study was in how learners perceived the e-learning process. The main question of this study was, therefore, framed around it, “to what extent is e-learning effective, from male learners’ perceptions?”

To answer the main question, subsidiary questions were developed:

1. What was the extent of the learners’ perceptions of their abilities to learn autonomously through e-learning?”

2. What was the extent of learners' perceptions of their interaction with content, instructors and between themselves in e-learning?
3. What were the positives and negatives of e-learning according to the learners' perceptions?
4. What were the learners' perceptions of the requirements and barriers facing e-learning and their suggestions for the improvement of e-learning?

These four sub-questions provided scope to apply the main question through the research tools that were selected for the study.

### **2.23 Purpose of the study**

To serve this study's aim of evaluating the effectiveness of the e-learning experience in some universities in Saudi Arabia from male learners' perceptions, the purpose of the research process was to provide data for this evaluation by measuring the range of the learners' perceptions of their abilities to learn autonomously through e-learning, their subjective rating of their interaction with content, instructors and each other in e learning, their summations of e-learning's positives and negatives and their perceptions of barriers facing e-learning and its requirements and possible improvements.

Whilst these were the purposes of the research questions, the purpose of the study as a whole was to provide a resource and a framework to universities who planned to develop or upgrade their e-learning program in this way, so that they could perceive possibilities and make informed choices about their planned innovations. Both new entrants and existing facilities within this category of learning could use the results of this research to optimize their provision and enhance its effectiveness. Last, but not least, this study proposed to add to the available fund of knowledge about learning processes, in particular e-learning processes, to show how these can be made available to more people, in more effective ways and at lower cost than is possible through the traditional routes to learning.

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The foregoing two chapters have summarised and analysed the history of e-learning, its implementation in Saudi Arabia and the many dimensions under which it has been studied to date. This closes with recognition for all the researchers of the previous studies related to this thesis. They have been both beneficial and useful in suggesting the problem to be investigated and enriching the theoretical framework of this study. They have pointed the way to the most important characteristics of e-learning and to suitable parameters for the study of this subject.

The next chapter will discuss the methodology used to answer the questions of this research and the instruments used to gather information.

**Chapter 3. The methodology**

**Introduction**

**3.1 Nature of the research**

**3.2 Quantitative and qualitative methods**

**3.2.1 Differences and similarities between the qualitative and quantitative**

**3.2.2 Strengths and weaknesses in the quantitative method**

**3.2.3 Strengths and weaknesses in the qualitative method**

**3.3 Study instruments**

**3.3.1 The questionnaire**

**3.3.2 Focus group interview**

### Introduction

In this chapter, the definition of “research” will be discussed. Then the methodology used to get answers to the questions of this research will be considered in terms of the definitions on which it was based, its strengths and weaknesses, advantages, and disadvantages. The instruments used to gather information will be closely examined.

### 3.1 The nature of research

Systematic research is the most appropriate means to investigate facts and ideas, to gain new knowledge and to interpret events. Trends and tendencies can be established which help to predict future needs. Moreover, it is the most important way forward for development and revitalization in modern times (Alashari, 2007). According to Mertens (2009) research is “one of many different ways of knowing and understanding” (p.2).

There are a number of possible paradigms for carrying out research (Cresswell, 2003), which can broadly be categorised as: positivist, anti- or post-positivist, and pragmatic (Johnson and Duberley, 2000). Positivist research accepts the existence of an external reality and seeks to describe this, and so tends to be more quantitative, consisting, perhaps, of experiments, structured surveys and questionnaires which yield clearly definable and comparable results across different contexts according to agreed approaches within the field. Meanwhile anti- or post-positivist work suggests that aspects of the external world are more fundamentally unknowable, as more dependent upon context and participants perspectives (Hildebrand, 2003). This perspective tends to favour more qualitative methods such as interviews or other approaches and other instruments that capture shades of meaning to record experiences more appropriately (Rist, 1977). A pragmatic approach attempts to sit between these two dichotomies (Johnson and Duberley, 2000), accepting the limitations of a realist perspective of the world by maintaining that such knowledge is provisional and revisable, but nevertheless seeking to establish as consistent a picture as is

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possible with the tools available, and crucially requiring a critical or reflexive approach to adopted by the research. A mixed method approach which therefore seeks to triangulate quantitative data with qualitative reports to illuminate and develop understanding of a context therefore sits well with this underpinning pragmatist methodology. Any one or combination of these paradigms may influence researchers' decisions. Indeed, the literature shows that there is a long debate and there is no agreement about exclusivity of approach in research, so any given study can reflect one or more than one approach (Mertens, 2009, Cohen et al. 2004, Alassaf, 1998). In this situation researchers must be as clear as possible about their selection of the problem and their procedures. The choice of paradigm, according to Creswell (2003), results from the problem of the study and the capacities of the researcher and the respondents. Creswell's three considerations led to a pragmatic paradigm for this study (mixing data collection methods and data analysis procedures). Indeed, the approach adopted here was exclusively designed to address the questions of the study in a way that would reassure respondents at the same time as promoting open responses. Thus the spoken word, facilitated by the mixed methods, allowed for confident responses with the culture of the location (Tashakkori and Teddlie, 2002, Darlington and Scott, 2002, Creswell, 2003).

The explanation offered by Tashakkori and Teddlie (1998) and Creswell (2003) emphasised appropriateness, authority, respect and independence in matters of selection and procedure and showed the importance of integrity in the relationship between the researcher and the researched. Mixed methods are endorsed by Tashakkori and Teddlie (2002) because they can reveal complexities within a situation and allow for deeper insights into respondents' experience whilst having the scope to record differences of opinion.

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Accordingly, Bryman (2004) suggests that combined quantitative and qualitative approaches can represent differing perspectives fairly and can verify findings so that an issue can be more thoroughly examined.

Research is conducted according to rigorous and systematic standards. This implies that the work proceeds with specific steps which are prepared according to the principles of systematic inquiry. These start from identifying the research problem and designing the tools for data collection, to proceed through analysis and discussion, until the study arrives at its recommendations. All of this is done impersonally and without bias (Alassaf, 1998). The steps by which the main question of the research was broken down into sub-questions have already been described.

Thus systematic research is a rational effort, which aims to discover the facts, and make sure that they are correct. It analyzes the relationships between facts by following a definite approach. Research has special characteristics, mentioned by a number of researchers in the field. They suggest that the possibility of a study must be identified and subjected to a research plan that ensures objectivity. The study is applied with honesty, reliability and realism, to provide an information base that allows transparency for the subsequent processes of analysis and generalization (Obadat et al.1996, Aweys, 1999, Cohen et al. 2004, Alashari, 2007). The multiple procedures of research lead to many and various goals which negotiate the nature, size, and complexity of the information yielded by the inquiry. This negotiation is a response to limitations that arise from the researchers' decisions about their scope to address the data systematically and practically, financially and technically. Scholars of research have mentioned a variety of justifiable goals such as description, interpretation, criticism, generalization, and discovery, invention, development and analysis (Alashari, 2007). Issues discussed in the background to this research have shown the ways

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and means used to provide an impersonal and unbiased account of e-learning in the chosen setting.

Despite the foregoing overview of the epistemology of systematic inquiry, there are a variety of names for these considerations in the literature Such as methodology, method and approach. “Methodology”, according to the Longman dictionary (2004) is: “ The set of methods and principles used when studying a particular subject” and Cohen et al. (2004) took this further by adding that it “can be used as a foundation for inferences and interpretation, for explanation and prediction” (p.47). Wellington (2003) described methodology as an active process: “activity or business of choosing, reflecting upon, evaluating and justifying the methods you use” enabling researchers to “describe and analyze these methods, throwing light on their limitation and resources, clarifying their presuppositions and consequences, relating their potentialities to... the frontiers of knowledge.” (p.22). Although, there are overlaps and similarities between these definitions, Cohen et al. (2004) distinguished methodology from method by suggesting that the method is an alternative, chosen from a “range of approaches used in educational research to gather data which are...a basis for inference and interpretation, for explanation and predication”(p.38).

Because this research used a survey approach, close attention will be given to it here. A survey was described by Cohen et al. (2004) as the collection of information derived from such means as “one or more of the following data-gathering techniques: structured or semi-structured interviews, self-completion or postal questionnaires...and attitude scales” (p.209).

Alassaf (1998) further suggested that the survey approach was useful:

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to achieve one or more of the following goals,... to offer a full description and accurate diagnosis of the phenomena under consideration; identification of problems or provision of evidence to prove realistic behaviour or existing situations; comparison of two or more facts; suggestions of corrective judgment on a specific situation; analysis of specified experience in order to make decisions in similar matters (p.85).

Accordingly, a survey based on a questionnaire and focus group interview was used in this study, which would yield the desired information quantitatively and qualitatively regarding the effectiveness of e-learning. In brief, mixed methods were used to collect and analyze the data for this research.

The related literature shows the choice of methodology as a matter of validity within the parameters of time, money and resources that constrained the research. The first study tool both quantified flexibility and interactivity by means of the learners' perceptions of their opportunities through e-learning and invited them to rate the quality of e-learning on a five point scale. This part of the research was carried out by using a questionnaire that was capable of recording qualitative perceptions as well as quantitative ones. Hence, within this tool, the methodology was mixed. The solely qualitative tool was the focus group interview where open-ended questions enabled a sub-group of the respondents to discuss their perceptions of the positives and negatives of e-learning, its barriers and requirements and their suggestions about it.

Whilst the methodology of this study is mixed, its method combines two tools which are typically used on either side of the methodological spectrum. Reliable research is conducted according to systematic standards by proceeding in specific steps which are prepared according to the principles of systematic inquiry. These start from identifying the research problem and designing the tools for data collection, to proceed through analysis and discussion, until the study arrives at its recommendations. All of this is done impersonally and without bias.

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The foregoing section has considered methodology and methods as shown in the literature. It has observed that methodology is concerned with the researcher's theoretical approach which guides the selection of information for the inquiry and the choice of methods to collect and analyze the data. Although the methods may be selected as either quantitative or qualitative, the literature has supported a mixed approach and this research has adopted that option. Some consideration of each method is offered here before going on to detail its selection for the present study.

In the following section each method will be further defined separately and its advantages and disadvantages will be discussed. Here, the research method will be considered as a technique used to collect information both quantitatively and qualitatively. The definition refers to the use of widely known instruments such as questionnaires, interviews, documents, reviews, and observations (Bryman, 2004).

#### **3.2 Quantitative and qualitative methods**

This section aims to describe the quantitative and qualitative methods as defined in the literature and their relation to this study.

According to Mertens (2009) the quantitative method is found in "research that measures variables in a quantifiable way" (p.3). It is the collection of data through the use of quantitative instruments such as questionnaires, that have been developed to ensure the data's validity and reliability, and have been applied to a sample that is representative of the population. Following its collection, the data is then processed quantitatively, leading to statistical results which, when analyzed, can be generalized to the whole population with a certain degree of confidence. The quantitative method is typically more focused on experimentation and the disclosure of the cause or the result of phenomena and its validity depends on the accuracy and rigour of the numerical data (Bryman, 2004). For the present research the raw scores found from the questionnaire responses were analysed using SPSS

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with the support of the statistical departments of the universities where the study was carried out in accordance with the approval granted by the universities

On the other hand, qualitative method, as it is found in the literature, emphasizes the interpretation of phenomena, seeing research as “a situated activity that locates the observation in the world visible ...they turn the world into a series of representations, including field notes, interviews, conversations, photographs, recording, and memos to the self...qualitative research involving an interpretive, naturalistic approach to its subject matter” (Mertens, 2009) (p.225). Denzin and Lincoln (2000) find qualitative research unproblematic, saying it involves “personal experiences, life story, interviews ...” (p.3). Whether it is seen as symbolic or not, qualitative research captures holistic pictures using words. It is the collection of data through the use of qualitative instruments such as interviews, focusing on verbal description, observation and the study of documents. Its validity arises from procedures rather than the sample, which is often small. The data is collected through the interaction between the investigator and the respondents. Moreover, the contextual analysis of the data leads to specific conclusions. Because this method is not so much designed for generalization as it is to reveal in depth experience of the phenomena under study, the result may not be typical of the whole population that the sample represents ( Bryman, 2004).

From the previous definitions it is clear that qualitative research is most useful for description and getting a deeper understanding of phenomena. It leads to the analysis and interpretation of various phenomena and can answer the questions: “how” and “why”? It takes account of the views, opinions and experiences of humanity. It provides subjective data rather than objective data. It is based on holistic and comprehensive understanding of the subject, and it is an inductive style. While, on the other hand, the quantitative is typically focused on experimentation and the disclosure of the causes and results through

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numerical data. Taking account of a number of variables, quantitative research has a deductive style (Bell, 1999; Guba, 1990). In this research the qualitative method was used for the optional open-ended question that concluded the questionnaire and for the focus group interview. In both cases, one of the consequences of voluntary completion of this extra inquiry was the significant reduction of the sample size in comparison with the number of respondents who completed the Likert scale section of the questionnaire.

A method of research has been explored in the literature that is termed “mixed method” which, according to Mertens (2009) is “the use of both quantitative and qualitative methods to answer research question in single study ...” (p.293).

Whilst the last section has outlined the major contrast between quantitative and qualitative research, the section below further defines the significant differences and similarities between the two methods and the strengths and weaknesses of each of them.

#### **3.2.1 Differences and similarities between the qualitative method and quantitative method**

This section offers two sub-sections. The first surveys a number of differences mentioned by those interested in the field, and the second focuses on the similarities that have been found significant. The most important aspects of the debate are considered here.

The most important point is that the differences in the techniques and objectives of each method affect the selection of the sample for research. On the one hand, qualitative research aims to obtain information from specific groups of the population often indicating a small sample. While, on the other hand, the quantitative method aims to obtain representative samples of the population by the random selection of sizeable samples. In other words, qualitative research does not necessitate a statistically representative sample, as quantitative research does; but it uses the sample determined by the researcher based on the purpose of his research and its context, whilst ensuring adequate information for a deep

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understanding of the phenomena under review. Another difference can be found in the criteria used in the qualitative approach to verify the validity and reliability of data. This differs from those used in the quantitative approach.

There are four main information-gathering instruments used as appropriate to the selected approach. For the qualitative approach there are three basic tools to collect data: interview observation and documents' study, while quantitative study relies largely on questionnaires. Another difference is in the mode of collecting information. For qualitative research, this is most often done through face to face dialogue with individuals or groups, and/or observation of them and it requires a lot of time. Quantitative research may be done indirectly by email, post or third person distribution. At the analytical stage, quantitative analysis relies mainly on the statistical calculation of means, frequencies, and variance analysis and so on whilst analysis, in qualitative research, is based on reading the data and contextualizing events in a non-quantitative way. Unlike quantitative research, this does not transfer to numbers; moreover, the data is obtained from observation of every thing that contributes to the events under review including attitudes, images, documents and verbal and non-verbal communication (Smith, 1983; Zikmund, 2000; Burns, 2000). In short, "quantitative research collects numerical data and qualitative research collects words, pictures, and artefacts and mixed methods research collects both types of data."(Mertens, 2009)(p.3).

The differences mentioned above will now be set against the similarities between the two methods. In both cases analytical methods specific to the data must be used and both methods are designed to reach conclusions and proposals. Because of this quantitative and qualitative methods can complement each other and they may be used together to triangulate against each other. In this way they may be used to maximize the strengths and minimize the weaknesses shown in the following section.

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Many writers have mentioned a number of strengths and weaknesses in each method. They will be summarized in the following sub-sections and related to the methods selected for this study. Considerations in these sub-sections are ordered according to the sequence of processes common to systematic inquiry. After summarizing the strengths and weaknesses of each method, a defence is offered of the weaknesses of the qualitative method with particular reference to its use in the present study.

### **3.2.2 Strengths and weaknesses in the quantitative method**

The quantitative method is capable of answering the questions “where, what, when?” and sometimes there is a preview of the answer in the hypothesis. In this method the hypotheses are tested statistically and the result can be generalized to the population because the sample is carefully selected. The results are statistically reliable, and to some extent there is less risk of bias because of the absence of direct contact between the researcher and respondents Cohen et al. (2004). Its value is its simplicity. On the other hand, the weakness of this method is that questions have to be direct and easy to measure and the hypothesis needs to be correspondingly specific. On the other hand, the sample must be large and representative to get results capable of being generalized. The quantitative method must be applied on the subject known before the survey. Nevertheless, the researcher must be aware of the need to avoid bias. Research procedures are time consuming, expensive and sometimes cannot provide in-depth information on the subject. Therefore, this method may not present solutions to complex problems (Key, 1997; Huysamen, 1997; Cohen et al. 2004; Bryman, 2004)

The present study accordingly stemmed from a number of questions. A proposed hypothesis was avoided because the study was an evaluative one seeking to find the effectiveness of e-learning without assuming an outcome either for or against this innovation. The use of the Likert scale enabled the researcher to apply statistical tests to the

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raw results but generalization was avoided due to the complexity of e-learning's developments. Nevertheless, the sample was randomly selected from the population by careful procedures. The SPSS results were statistically calculated. Although the questionnaire was a simple procedure, an open ended question was attached that enabled a self-selected group of respondents to offer further written comments. This added depth to the questionnaire and triangulated with the focus group interview.

### **3.2.3 Strengths and Weaknesses in the qualitative method**

The qualitative method provides comprehensive, deep and rich information that is sometimes unexpected. Despite the subjective element in observation and in the process of describing the phenomenon in its natural context, the method gives broader understanding of the situation than is yielded by the quantitative method. Unlike the quantitative method there is no preview of the answers to questions of "why and how?" Useful research can be done using a small sample and research instruments allow access to unique images and events in the phenomenon enabling the researcher to quote some sayings of the respondents (Key, 1997; Huysamen, 1997; Cohen et al. 2004; Bryman, 2004). Whilst the researcher is looking for in depth information, the research scope is limited and cannot cover more than one topic at a time. Because the method requires the presence of a researcher or his assistant, the nature of an interaction with the participants can be affected. Indeed, not all participants will offer the same degree of credibility and participation. Nevertheless, the collection of data and its analysis may take a lot of time and subjective elements may affect the validity and reliability of the study. Thus it may be difficult to prevent a researcher from being biased in the collection, analysis and interpretation of the data. The results of the research are likely to be difficult to generalize (Key, 1997, Huysamen, 1997, Cohen et al. 2004, Bryman, 2004). Nevertheless, to respond to the frequent criticism directed at the qualitative method about its possible bias and arising from the effects of the researcher's presence at data collection point and whilst analyzing the information, further discussion is

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worthwhile. Some supporters of the qualitative method reply that the methodology is not constructed from first impressions, or on fast and short visits to some participants, but that there are in-built checks and balances to the research process which accesses data in multiple ways, even though the findings must be affected by the interpretation applied to them. Therefore, the researcher must constantly pay attention to the avoidance of the bias, and must be adequately acquainted with his role (Cohen et al. 2004). Thus, this kind of criticism seems to be directed at the researcher not at the method itself. In fact, the bias more or less depends on the researcher who can reduce its extent by providing a good quality of evidence. The quantity and quality of data, the depth of analysis, and the ability of a researcher to do everything objectively are all balancing factors well within the capability of the researcher who is well versed in qualitative research. By examining the possible extent of bias inherent in the study, it can be contained within reasonable limits and acknowledged as part of the research, This is a necessary step, given that, during the gathering of information and its interpretation, it is impossible to get rid of prejudice although the researcher may succeed in reducing it to as little as possible. This is consistent with what Bryman (2004) mentioned that it can be impossible to totally eliminate bias, because it may possibly occur at any stage of the research. Therefore, the researcher has to be aware and strive to not affect the research process.

Because the present study used learners' perceptions of e-learning to gauge its effectiveness, comprehensive information was expected. The key concept of autonomy implied that learners' subjective perceptions could be used as valid ratings of this effectiveness. The mixed methodology allowed learners' ratings of each item of the four dimensions to be compared and the findings were amplified by the open ended comments and the focus group interview. Indeed the two qualitative tools offered a broader understanding of the positives and negatives of e-learning, its requirements and barriers. There was no attempt to anticipate the learners' suggestions for the development of e-

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learning which because of the small sample attending the focus group interview, were expressed during an in-depth and wide-ranging discussion. In this small group setting, the researcher was able to note paralanguage and body language as well as transcribing some sayings of the respondents. Whilst the method required the presence of a researcher, the collection of data and its analysis was facilitated by his close observation which informed later transcriptions from the video recording of the event.

Although care was taken to avoid bias the results of the research were still subject to the rapid developments in ICT and may not be free of the novelty effect (Clark and Sugrue, 1991). This resonates with the Hawthorn effect, when the participants increase their performance because they are being studied, and with the John Henry's effect, when the participants change their behavior because they are in control groups where they see themselves as being in competition (Adair, 1984; Saretsky, 1975). Accordingly, learners' perceptions may have been affected by their response to the research tools or enhanced by the attention given to e-learning for the purposes of this study. So caution is advised here regarding the generalization of the results. The researcher was aware that it would be impossible to totally eliminate bias, because it may possibly occur at any stage of the research. Therefore, multiple drafts of the findings were checked and cross-matched quantitatively and qualitatively to arrive at the results offered in the present study.

Additionally, in the related literature, critics have compared the ways of measuring validity and reliability in the quantitative method with those used in the qualitative method. In this mixed method study, however, one tool has been used to check the other. Considering the constraints neither method was appropriate for the full application of the research questions so both methods were used to complement each other. Actually, using mixed methods benefited the research by making information available both numerically and in text. The

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subsequent analysis took advantage of the strengths of both methods and provided checks and balances against their weaknesses. This procedure is supported by Bryman (2004).

Gall et al. (2003) discuss using both methods, suggesting this helps to produce a wider exchange of views and renders good quality results. Indeed, by taking account of all the debates about each method, whatever the researcher's preference may be, the research is usually driven by what the researcher is appropriate to the objectives of the study and to ensure sound answers to its questions. Arising from the nature of the present study, for example, and its aims and requirements, the most appropriate use is of the mixed method.

A brief summary from related literature, of the benefits of using mixed methods and their relation to this study follows. There is additional flexibility in the research plan when both methods are used, for instance, the two methods may be used simultaneously or sequentially (Field and Morse, 1985). One method may be used to facilitate and help the other, for example, a questionnaire can help to choose a focus group as an interview sample (Ross et al. 1990; Cohen et al. 2004). Moreover, in the present research, questions were asked of the population whose culture preferred speech to writing. In addition, both methods made it possible to triangulate the phenomenon in more than one way, and to enhance the validity of the study and increase the understanding it offered by getting in-depth views and opinions which may be difficult to express in quantitative or statistical responses. Lastly, the literature suggested that either method may satisfy the style of the reader or the beneficiary of the results; either may find the quantitative result or the qualitative result more credible (Bryman, 2004).

The foregoing sections have detailed the strengths and weaknesses of the quantitative and qualitative methods of research and have argued for the use of mixed methods as a means of maximizing strengths and minimizing weaknesses. Relevant arguments have been applied directly to the present study and the appropriateness of the researcher's choice has

been shown both in the light of the objectives and cultural context of the research and in regards to literature within the field. The following section will consider the research instruments selected for this study.

### 3.3 Study instruments

This section will highlight the tools of the study: the questionnaire and focus group interviews. Issues of validity and reliability will be discussed. The pilot study, population and the sample, with its characteristics, will be explained.

Cohen et al. (2004) explained that the selection of study tools is determined according to research methodology and with considerations taken of all previous discussions about methodology. In the light of the foregoing discussions, the questionnaire and focus group interviews were selected as the most appropriate tools for information-gathering for this study.

The questionnaire answered the first and second sub-questions about learners' abilities to learn autonomously through e-learning and the extent of their interaction with the content, instructors and colleagues. After analyzing the questionnaires a focus group interview was conducted to answer the third and fourth sub-questions about the positives and negatives, and the requirements for and barriers to e-learning and to collect suggestions for the development of e-learning.

#### 3.3.1 The questionnaire

The questionnaire is the most well known information-gathering instrument used by researchers in the social sciences. It is a form constituting a list of questions covering a certain part of the study, or the whole study, to provide certain information to a researcher who needs to address a specific problem. According to Wiersma (1986) the questionnaire is “ a list of questions or statements to which the individual is asked to respond in writing; the

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response may range from a checkmark to an extensive written statement” (p.179). Alassaf (1998) defines it as “a form including a group of questions and / or written expressions associated with answers and / or possible opinions, or blank spaces for answers” (p.342). Questionnaires are of many types: closed, open, closed and open and photo-questionnaires. Each type is used in a particular situation and for specific goals. In this study the researcher used a closed-questionnaire which consisted of a list of questions answered by the respondent through the five points, Likert Scale. This type was chosen because it was readily available to the research process which was constrained by limited sources of funds, time and travel to attend to matters of distribution, collection and follow-up. Furthermore, the questionnaire can be used with a large sample and answered quickly, so it is less costly to respondents in terms of their efforts, time and money. Moreover, the Likert Scale is common in this field and it gives freedom to the respondents for selection across five ratings. The layout of the instrument offers the respondents speed and ease of use, and a high degree of reliability and reduces the degree of guesswork and chance by standardizing the range of responses throughout the instrument (Gay and Airasian, 2000; Oppenheim, 2001; Cohen et al. 2004).

A number of advantages are mentioned in the literature for this procedure and these are its ease of application, its advantages in terms of bias and, its ability to standardise and compare responses. Questionnaires can avoid the difficulty of interviewing a large number of respondents face to face. Questionnaires also have the advantage of providing sufficient time for the respondents to think about their answers, which enhances their accuracy. Thus, there is arguably a greater degree of validity. There is also the scope to avoid bias because the researcher is absent. Questionnaires provide for standardization and harmonization of data and facilitate the compilation, tabulation and reporting of results that are often accurate

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and stable. The procedure is widely accepted as an efficient approach in terms of time, effort and money (Gay and Airasian, 2000; Oppenheim, 2001; Cohen et al. 2004).

Despite these advantages, the questionnaire requires great skill and accuracy in its preparation to avoid such reservations as lack of understanding, misleading cues, and a low rate of returns. Non-interference of the researcher may result in the inability to ensure the respondents' understanding of the procedure. The formulation of the questions, especially those aimed at perception and attitude, views and feelings can be misleading if they are not phrased appropriately. The lack of response to the survey and the lack of returns can persist despite three follow-up attempts; that are known to drive up the completion rate to between 10% and 50%. This is in contrast to the interview which yields effective results at rates of up to 70% and 80%. In regard to the accuracy of their responses, when answering, respondents cannot adjust the circumstances assumed by the question and this may distort their answers. The ways the questions are constructed might influence the respondents unduly. Sometimes there are differences between the respondents in terms of interaction and seriousness in dealing with the questionnaire. Some respondents tend to provide inaccurate or partial information because of their own social considerations (Cohen et al. 2004).

The ease of application was a strong feature leading to the choice of a questionnaire for this research, time and financial constraints had to be considered both for personal and academic reasons, bearing in mind the rapid evolution of e-learning. For the large sample of three hundreds learners whose perceptions of e-learning were sought, the absence of the researcher was an enabling factor as well as a discretionary one to avoid to the tendency to seek to please an outsider. The freedom from bias of the questionnaire was ensured by thorough checks in both languages and adjustments to the culture of the location. The capacity of the questionnaire to yield standardised results that could be compared to one

another was ensured by careful consideration and academic oversight in all the universities concerned in the project. Whilst benefiting from the advantages of using this tool, the disadvantage of a poor return rate was addressed by the diverse means available for the delivery and collection of the questionnaires.

The foregoing section justified the choice of a questionnaire as a main instrument for this study. The following section will give more information about how the tool was constructed.

#### **3.3.1.1 Questionnaire procedure**

Having considered the advantages and disadvantages of the questionnaire as a research instrument, the importance of careful construction of the specific tool used for this research is clear. This section examines the process of constructing the tool.

The first step in constructing the questionnaire was to convert the main study question to four sub-questions: the first and second to be covered by the questionnaire, where the questions were differentiated into four dimensions. Some demographic information was requested to control variables. These were specialization, previous learning by e-learning, and age and ICT skills. This request aimed to get background information to classify the answers and to use them in comparing respondents within the group and to know if there were significant differences in their self-perceptions (Bell, 1999).

The first dimension, their abilities to learn autonomously through e-learning, answered the first question in the study, “What was the extent of the learners' perceptions of their abilities to learn autonomously through e-learning?” This was followed by the second, third and fourth dimensions, learner-content-interaction, learner-instructor-interaction and learner-learner-interaction in e-learning. Together, responses to these dimensions answered the second question of the study, “What was the extent of learners' perceptions of their

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interaction with content, instructors and between themselves in e-learning?” The questionnaire concluded by asking an open-ended question by inviting respondents to add anything that was not mentioned in the questionnaire. The last paragraph included an invitation to participate in the focus group interview (See Appendix A, B, C, D).

Whilst constructing the questionnaire cautions mentioned in the literature were taken into consideration, for example, the questions should be written in the respondents' own language, in a clear, understandable style, and free from vague terminology. Items were arranged logically, such as from generalities to specifics. Each one focused on one thing. The items were concise and meaningful and led to definite answers. They were easy to answer and did not force the respondents to think deeply. The items left respondents free to portray their own reactions whilst they yielded appropriate information to the researcher. Thus, the items were designed to encourage the respondents, leaving them free from embarrassment or the feeling of being forced into unwelcome considerations or private concerns.

All negative questions were avoided as were recall questions, lengthy questions, and questions with emotional or value-laden overtones. The questionnaire was also designed to be attractive. It was presented to the specialists and experts in the field of research and within the field of study, to be evaluated before being distributed to the respondents to ascertain its validity. The researcher examined it through distribution to a small sample, or pilot study, to make sure that the questions measured what they were intended to measure with validity and to a high degree of reliability (Obadat et al. 1996, Alassaf, 1998, Aweys, 1999, Gay and Airasian, 2000, Oppenheim, 2001, Robson, 2002, Cohen et al. 2004, Alashari, 2007).

After constructing the questionnaires in the light of the above considerations, the next step was taken, namely: translation. The procedure for this step is outlined below.

### 3.3.1.2 Translation

The process of translation is an exacting one due to the different cultural demands of each language group in addition to the technical task of finding the correct match for lexis and grammar. The section that follows outlines the major concerns addressed by the design of this piece of research.

Because the language of the respondents was Arabic, the researcher had to translate the questions into Arabic. This procedure was done through many stages. Initially, after the approval of the supervisor, it was translated by the researcher, and then three specialists in Arabic/English translation were consulted separately, to get three different versions which were then matched to make one version which was expected to be closest to the original meaning. This combined version was sent again to the three translators to get their final approval. Throughout, discussion was sometimes required with these specialists to ensure the accuracy of translation and to clarify what was meant by the researcher. There was an additional check of the appropriateness of the translation when the questionnaire was sent to a committee of referees in two versions, Arabic and English, the English copy being included because most of the referees were bilingual, and this was another way to ensure accuracy and clarity. All of the referees agreed about the correctness of the translation. Of course, consulting with specialists in translation continued at all stages, from designing the questionnaire and through all its adjustments, until the final distribution to the respondents.

To ensure the largest number of participants, the researcher prepared a cover letter for enclosure with the questionnaire, mentioning the subject of the research and the method of answering the questions, and asking respondents to cooperate by replying quickly. The way to return the questionnaire to the researcher, as well as assurance that the answers would be strictly confidential and would be used for research purposes only, concluded this letter. Respondents were thanked, in advance, for their cooperation. Cohen et al. (2004) stated the

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purpose of the covering letter was “ to indicate the aim of the survey, to convey to respondents its importance, to assure them of confidentiality, and to encourage their replies” (p.97).

Having designed, revised and resubmitted the questionnaire as detailed above, the initial process was considered complete so the second step was to seek access to the source of information through a viable means of distribution. The following section traces this process and shows its importance.

#### **3.3.1.3 The ethical issues**

The study followed the model of social research and the ethical and moral matters related to it, especially the guides of ethical issues in educational research by Cohen et al. (2004) and Hall and Hall (2004). Accordingly, for the study, the researcher gained the official permission from both universities (see next section 3.3.1.4 and Appendix K, L) which meant they both approved the methodology once it was adopted by their ethics advisory committee. In addition the participants' consent was gained and they were informed about their rights, for instance, that their participation was voluntary and all their information would be kept confidentially, the information only being used for the purposes of this research and not revealed as raw data nor would their personal details be revealed, being protected by anonymity. Moreover, participants had the option to withdraw at any time. Anonymity of the questionnaires precluded analysis of the focus group regarding their representation of the variables common to all participants. Actually, in this research, the study objectives were explained to the participants together with what they would be asked to do in terms of questionnaire or focus group interview. Ethical clearance was also granted by the School of Education Ethics Committee at Durham University.

### 3.3.1.4 Gaining access and achieving distribution

It is necessary, in field work, to get formal permission to reach the respondents. Therefore, the cooperation of staff, instructors, and respondents is necessary to guarantee the distribution and ensure the largest return of the questionnaire (Cohen et al. 2004).

This step began at Durham University where an official letter was signed by the supervisor and sent to the Saudi Cultural Bureau in London. This requested approval to carry out the study and collect the data (see Appendix G). Based on that letter, a letter was sent from London to the Ministry of Education in the Kingdom of Saudi Arabia to seek approval for the research. The letter clarified the title of the study and its questions and objectives, and its proposed timeframe (see Appendix H). The Ministry of Education, in its turn, sent a letter to the Ministry of Civil Service for approval (see Appendix I). Finally, a letter was sent to the King Saud and Imam Universities asking them to enable the researcher to conduct his study and to facilitate its tasks (see Appendix K, L). The agencies of the research in each university approved the letters and forwarded them to their e-learning deanship with the result that the data was collected over a period of three months from 1/10/ 2008 to 30/12/2008(see Appendix K, L).

At the end of the access process, the researcher got the new and updated list of the names of the target students in the two universities. It was also necessary to obtain a user name and password, as a student and lecturer, for the access to the e-learning software being used by each university.

The sample was then selected by withdrawing names from the lists as explained in Chapter Four Section (4.1) below. Then, the researcher numbered the questionnaires, starting from 001 to 150 for the University of King Saud and from 151 to 300 for the Imam University, and then the questionnaires were distributed to 300 students. To ensure the highest possible return, distribution was done in two ways: electronic-questionnaire and researcher-

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distributed paper questionnaire. This particular effort was expected to raise the rate of return of completed responses (Bell, 1999, Oppenheim, 2001, Robson, 2002, Cohen et al. 2004).

After the return of questionnaires, they were checked to exclude any incomplete or non-serious responses. This reduced the acceptable number to 200. Then, the responses were coded, entered into the Microsoft Office Excel software from which they could be transferred to the statistical package for social science (SPSS). This was done under the supervision of the specialist in the Centre for Research and Statistics at King Saud University. Note that the consultation about statistics started from the very beginning of the design stage to select the appropriate measures to achieve the objectives of the study. All the analysis of data was done in this centre.

#### **3.3.1.5 The questionnaire's validity and reliability**

Researchers at large agree on the importance of validity and reliability. The common definition of "validity" is to question whether the test measures what it is intended to measure. In other words, "Do we measure what we want to measure?" For example, when developing a test to measure the learner's ability to count, the test will be valid if it measures the ability in question, but, if it measures something else, like writing, it is not valid (Cohen et al. 2004, Oppenheim, 2001, Gay and Airasian, 2000).

In fact, there is more than one type of validity. The others can be specified as: content-validity, criterion-validity, face-validity and construction-validity. In this study, the researcher adopted face-validity and content-validity. Oppenheim (2001) stated that content-validity "seeks to establish that the items or questions are a well-balanced sample of the content domain to be measured" (p.162).

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In fact, there are several routes to achieving content-validity, from sound research construction, through presenting the plan to experts, to statistical analysis of the validity and reliability. Formulas are available, such as Cronbach's alpha coefficient which ranges from zero to one (unreliability-reliability) ( Gay and Airasian, 2000).

Having established the ideas of validity and reliability, the following section will consider the face validity of this study.

#### **3.3.1.5.1 Face-validity**

In this research, specific steps were taken, before the final distribution of the questionnaire, to achieve the greatest possible degree of face-validity. These steps are summarized as follows: presenting the questionnaire to a proof reader to help provide clarity, presenting the questionnaire to colleagues in the Department of Education, University of Durham, especially to doctoral students for discussions with them, presenting the questionnaire in its primary stages to the supervisor, presenting it to the specialists and experts in the field of study and research. Finally the questionnaire was put before a committee of referees for evaluating it in all aspects: language and clarity, contradiction or duplication. It was submitted to this body in two versions, Arabic and English, with a cover letter (see Appendix A, B, C, D). The questionnaire was also presented to a statistician to evaluate and help to choose the right measurement (Gay and Airasian, 2000, Oppenheim, 2001, Cohen et al. 2004). In this way, it can be seen that the process of translation helped to validate the research instrument just as adjudication helped the translation. In general, there was approval, whilst some comments and recommendations were followed up by appropriate modifications.

Having examined the four steps that made data collection possible, the statistical measures used for this study will be explained, with particular reference to their use for the pilot study.

### 3.3.1.5.2 Statistical tools

The following section will describe the statistical tools that were used for the present study.

The current study used tools from the statistical package for social science (SPSS) as follows: Cronbach's alpha coefficient, the Pearson product-moment correlation, coefficients to measure validity and reliability, tests of frequency, percentages, means, and standard deviation. These tests yielded knowledge of the sample characteristics. The study also used the Independent Samples t-test, to know the significant differences between two groups and A One-Way Analysis of Variance "ANOVA", to compare three groups or more and Sheffe test to indicate the source of the differences that were found. In addition, this study used factor analysis to examine the dimensions (Osama, 2009).

These measurement tools were selected after consulting the statisticians at the Centre for Research and Statistics at King Saud University during the questionnaire design stage and in consultation with my supervisor. The experts approved these as well-known measurements which are used in the analysis of such studies and were very appropriate for this study.

Having listed the tests that were applied to the pilot study, details of how it was carried out will be discussed in the light of the literature.

### 3.1.1.5.3 Pilot study

The following section will describe the pilot study that was used for the present study.

A number of researchers recommend doing pilot studies (Wellington, 2003, Alashari, 2007). In particular, according to Bell (1999) "All data-gathering should be piloted ... to check that all questions and instructions are clear and to enable you to remove any items which don't yield usable data" (p.84). Hence, the purpose of the pilot study is to make sure of the selected format for the study, before proceeding to implement the main instrument. The pilot studies generally offer tests of the validity and reliability of instruments to ensure

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their suitability for use by the sample, and to discover if there are any difficulties to answer or whether the tool requires any adjustments, as well as to predict adequate time for respondents to answer the items. Carrying out such a pilot for the present study gave the researcher confidence in the tool, allowing time to reduce errors and produce a concise questionnaire. This pilot study was conducted on a small sample of respondents who were randomly selected and the total number was twenty, ten from each university.

The time for completing the form, was found to be appropriate. In general, 15 minutes was sufficient. Once this was established the data was entered into the Statistical Package for Social Science (SPSS) using Cronbach's coefficient alpha, and the Pearson product-moment correlation coefficient, to measure reliability and validity.

Having introduced the statistical tools, the following section considers the matter of reliability, internal consistency and the correlation between the dimensions.

#### 3.1.1.5.4 Reliability, internal homogeneity and the dimensions' correlation.

The internal reliability of the questionnaire was confirmed by "alpha" scale and it obtained 0.9420 which is considered very high Table 3.1. Thus, the correlation across the dimension was reliable, the results were as follows:

Table 3.1: Exhibiting reliability coefficient analysis scale "ALPHA" of each dimension

Dimensions	ALPHA coefficient
The ability to learn autonomously through e-learning	.8541
Learner- content- interaction in e-learning	.9280
Learner-instructor- interaction in e-learning	.8635
Learner-learner- interaction in e-learning	.8762
All dimensions	.9420

The internal consistency of the questionnaire was confirmed by the "Pearson" scale. The correlation was found to be high, confirming internal homogeneity; the results are shown on the following table (3.2):

Table 3.2 Exhibiting the Pearson correlation of each item in each dimension

No	Items	Pearson Correlation
<b>Dimension 1 the ability to learn autonomously through e-learning</b>		
1	In e-learning my learning is personalized.	.664**
2	In e-learning I can learn anytime, anywhere.	.692**
3	In e-learning I can learn based on my pace.	.754**
4	E learning presents what is suitable for my learning style	.712**
5	E-learning enables me to review the foregoing any time.	.647**
6	E-learning presents immediate feedback.	.736**
7	E-learning enables me to self-evaluate.	.777**
8	E-learning presents suitable technical support	.668**
<b>Dimension 2 Learner- content- interactions in e-learning</b>		
9	E-learning eases the process of learning.	.673**
10	E-learning encourages me to learn more.	.723**
11	E-learning increases my capacity.	.637**
12	E-learning increases the motivation to learn.	.714**
13	E-learning increases my productivity.	.785**
14	E-learning helps me to manage my time and self discipline.	.614**
15	E-learning encourages me to increase learning time.	.629**
16	I prefer to do the tasks and tests through e-learning tools.	.726**
17	I prefer to obtain my score through e-learning tools.	.680**
18	My results in e-learning were better compared to those I received in traditional learning.	.691**
19	E-learning meets my needs.	.738**
20	E-learning meets my expectations.	.737**
21	I enjoy learning by e-learning.	.773**
22	I feel more freedom learning by e-learning.	.670**
23	E-learning increases my confidence	.724**
24	I want to take other courses by e-learning	.702**
<b>Dimension 3 Learner-instructor-interaction</b>		
25	I prefer to communicate with the instructor by e-learning compared to face to face.	.344**
26	E-learning increases communication with the instructor.	.798**
27	I built a productive relationship with the instructor via e-learning.	.848**
28	E-learning eases discussion with my instructor.	.858**
29	E-learning encourages me to discuss with my instructor.	.809**
30	I enjoy contacting my instructor via e-learning.	.809**
31	In e learning I receive more attention from my instructor	.778**
<b>Dimension 4 Learner-learner-interaction in e-learning</b>		
32	I prefer to communicate with my classmates by e-learning compared to face to face.	.240**
33	E-learning has increased my communication with other learners.	.851**
34	I built a productive relationship with other learners via e-learning.	.846**
35	E-learning eases discussion with my classmates.	.897**
36	E-learning encourages me to participate in discussion with my classmates.	.850**
37	I enjoy contacting my classmates via e-learning.	.842**
38	E-learning increases cooperation among learners	.851**

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

To find the correlation of the dimensions with the scale, the “pearson” correlation test was used. The results are shown on the following table:

Table 3.3: Exhibiting "pearson" the correlation of the dimensions with the scale.

Dimensions		Total
D1 The ability to learn autonomously through e-learning.	Pearson correlation	.708**
D2 Learner-content-interaction in e-learning.	Pearson correlation	.897**
D3 Learner-instructor- interaction in e-learning.	Pearson correlation	.723**
D4 Learner-learner- interaction in e-learning.	Pearson correlation	.741**

\*\*correlation is significant at the 0.01 level (2-tailed) N=200

As shown on Tables 3.1 and 3.2 and 3.3 it is evident that there is statistically significant correlation at the 0.01 level. This indicates that the items in each dimension are internally homogeneous and all the correlations are statistically significant at 0.01. This indicates the existence of a strong and positive relationship between the dimensions and the scale.

In fact, the reliability and validity, like two sides of one coin, are all concepts which are looking at the efficiency of the questionnaire and its dimensions and its items, asking the question “Is it appropriate and suitable to use this as a measure?” If the results and relations are high and positive it means that the questionnaire is valid and fit for use in measurement. Reliability and validity are both imperatives and are closely related, when high scores are achieved in both scales, the data that will be reached will be a highly reliable reflection of what has been accessed from the data. In this study, as shown in the above three tables the questionnaire is reliable and valid.

Having discussed the validity of the questionnaire the second research instrument will be discussed: the focus group interview. A similar order of presentation will be followed considering, first, its definition, followed by the advantages and disadvantages of this tool, then the procedure used for its implementation.

### 3.3.2 Focus group interview

A full consideration of focus group interviews from the related literature and in respect of this study is offered below.

To clarify the order of implementation, the focus group interview was applied after the analysis of the questionnaire responses, and it aimed to answer the third and fourth questions: “What were the positives and negatives of e-learning according to learners' perceptions?” and “What were the learners' perceptions of the requirements and barriers facing e-learning and their suggestions for the improvement of e-learning?” Also, the focus group interview (Appendix E, F) aimed to triangulate the questionnaire by examining whether the responses were the same or different. This procedure would enhance the questionnaire's validity, by the increased understanding and knowledge of e-learning that was gained in this way.

Whilst the section about the questionnaire defined validity, triangulation is another check enabling the researcher to study the phenomenon from a variety of angles. Cohen et al. (2004) defined it as “the use of two or more methods of data collection in the study of some aspect of human behaviour” (p.254). Focus group interviews have been defined by Cohen et al. (2004) as “ a form of a group interview, though not in the sense of a backwards and forwards between interviewer and group, rather, the reliance is on the interaction within the group who discuss a topic supplied by the researcher”(376). Breakwell et al. (2006) said that a focus group is a “discussion-based interview that produces a particular type of qualitative data generated via group interaction” (p.276). “A special type of group in terms of purpose, size, composition, and procedures” was Richard and Casey's definition (2000, p.4).

Derived from the previous definitions, the characteristics of the focus group interview are: its verbal interaction that gives the interviewees the freedom to answer questions, its

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systematic method based on a set of steps and procedures governing the meeting, and the scope it gives to conduct the dialogue in the framework of the research objectives. The forum, therefore, is not just normal talk between two parties, but is designed to achieve a particular goal, linked to the nature of the study and the phenomenon under study or the nature of the data. It is useful for gathering information qualitatively, for discussing a particular topic in focus, generating information at minimum cost, collecting data about attitudes, values and opinions, and encouraging participants to speak out in their own words as they encourage each other to talk and discuss (Stewart and Shamdasani, 1990).

Of course, a focus group interview must have goals and provide answers to questions, just like the other research tools. Its design must begin by asking, "What is the information that the researcher wants to get from it?" Focus group interviews are specifically used to explore, confirm, and triangulate research questions (Robson, 2002). The interview, in general, the focus group interviews in particular are considered the most important instruments for collecting information in qualitative research. Focus group interviews started in business and political sectors, and later moved to the social sciences. Through the focus group interview, the researcher can recognize the thoughts, feelings and views of others. It shows the subject of the study and enriches it in ways that may not be apparent in other types of interviews. This additional clarity comes as a result of interaction between views of participants as they relate their experiences. The focus group interview is conducted by the researcher with a group of people gathered together at one time. The researcher's role is to manage the dialogue and direct it. In brief, it is a planned meeting for the researcher and the respondents to hold a dialogue to collect specific information about a particular subject of interest (Oppenheim, 2001, Ryan, 2003). Oppenheim further explained that the focus group interview is chosen to give freedom to the respondents, and to add flexibility to the research process, this type of tool not being confined to a specific way of

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asking questions, but allowing the researcher to offer the questions in different ways (Oppenheim, 2001).

Participants in this study's focus group interview were well prepared for the topic by their recent completion of the questionnaire. The group was composed of 21 learners, led by the researcher in a convenient location in Riyadh and they came together in response to an invitation appended to the questionnaire and confirmed later by email and mobile phone. At the venue participants were arranged to allow them to respond to paralanguage and body language cues as well as each other's statements. They were given scope to address the research objectives in semi-structured dialogue. The forum, therefore, was not just undirected talk but was designed to achieve the study's goals. Thus, it proved a useful tool for gathering their perceptions and discussing topics related to the status and development of the e-learning in focus. The researcher led the discussion by referring to a prepared schedule of questions allowing the participants to elaborate on their suggestions for e-learning. The questions posed to the focus group were prepared according to the full translation process outlined in Section (3.3.1.2) the focus group interview was video-taped, transcribed, then translated in keeping with the same process. Since the researcher was, himself, bilingual, he facilitated the exchanges made at the live forum without simultaneous translation and was able to respond spontaneously to maintain the interaction of group members at the level that would fulfil the requirements of the research tool. Subsequently, significant contributions to the discussion were selected and translated according to the consultative standards previously outlined.

With respect to the validity and reliability of the focus group interview, its questions had been presented to the proof readers, the supervisor, committee of referees and the translators. Note that Cohen et al. (2004) had stated two ways to validate focus group interviews. The first was, to measure it and compare it with the same tools in the similar

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fields. If salient features matched, it was valid. The second was the most practical way and this was by trying to reduce bias as much as possible, whether from the researcher, the interviewees, or the questions, the aim being to structure each item, used for the forum, with careful similarity.

A low cost and productive tool can, however, be unpredictable and difficult to follow. This is clarified below by relating the literature to the present study. The focus group interview involves less time and cost than other research instruments. It allows flexibility within the topics being researched. It facilitates the interviewee's understanding of the questions, and makes it easier for them to respond. It provides the researcher with assurance that the answer originates from the group members and is not influenced by outsiders. The interview is interactive and an understanding develops between the researcher and respondents, thus increasing their cooperation. The interview format allows the researcher to proceed with an in-depth search for meaning as the researcher deals directly with respondents, which gives an opportunity to clarify verbally and to use body language. Finally, it is easy for the researcher and decision-makers to understand the results. In short, the live forum generates a lot of rich information, faster than other research instruments can (Stewart and Shamdasani, 1990).

On the other hand there were some disadvantages to be considered. Of course, this does not mean that the focus group interview is always the best way to gather information sought by the researcher. Like other tools it has some disadvantages, the most important are the self misrepresentation that has sometimes been noted in interview settings ( Stewart and Shamdasani, 1990, Burns, 2000, Cohen et al. 2004). In addition, these researchers record their lack of certainty as to whether some aspects of the interview schedule may be fully covered. The interaction between the respondents can have negative effects, such as feelings that they are not independent from the others' controlling views. Direct and live

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answers from the respondents may lead a researcher to over-emphasize some of the information. The researcher may unintentionally, or intentionally, affect the respondents, attitudes. Some disadvantages of the follow up procedure are that it takes a long time for application and analysis and is confined to a small sample, which weakens the generalizations. Asking open questions can make it difficult to summarize and interpret the results. Some criticisms of this instrument as a common tool for the qualitative approach are made on such grounds as that it is unsystematic and cannot be used for generalization. These concerns were discussed in Section 3.2.3 (p. 115) ( Stewart and Shamdasani, 1990, Burns, 2000, Cohen et al. 2004).

The focus group interview was affordable in terms of time and cost for the present study. It allowed the researcher to investigate the learner's perceptions of the positives and negatives, requirements and barriers to e-learning, as well as their suggestions. It provided the researcher with assurance that the answers of the group members were original, offered with their full co-operation and there was evidence that they carefully phrased their words to clarify their meanings. Indeed, the forum fulfilled the researcher's purposes although the follow up procedure took a long time.

#### **3.3.2.1 The procedures of the focus group interview**

Once the focus group interview has been selected as an appropriate tool, the style of implementation must still be considered in the light of related research. Below are some relevant comments.

Forward planning includes identifying areas to be covered by the interviewees and developing appropriate questions, getting to know the interviewees through reconnaissance interviews before the actual commencement of the interview, making sure the equipment is good and providing alternatives, for example, having more than one microphone, tape recorder, video-camera to hand, and obtaining written permission from the respondents to

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use them. It is important to make a good start with the interviewees to remove their psychological barriers and to instil confidence between them, by modelling humility, openness and integrity. The information must be elicited by active listening and by encouraging the respondents to give sufficient information for the requirements of the subject. Indeed, the mediator's role is an essential part of the leadership of the group, to get the information needed without bias. Altogether, successful application of the focus group interview depends on good preparation and the training of the assistant to write or record with sensitivity and accuracy (Cohen et al. 2004).

Emails to inform members of the selected sample were sent, enclosing the focus group interview's objective, agenda, questions, proposed location, date and duration. Two weeks before the event, they were emailed again and phoned and Wednesday evening was set, the end of the week in the Kingdom of Saudi Arabia, to avoid any conflict with other appointments. Two sessions were arranged with a break in between. An appropriate place had been chosen that was close to the majority of interviewees and well known to them. This was the meeting hall, fully equipped with up-to-date technology, near to the Deanship of e-learning at the Imam University.

The researcher needs not only to record the live forum in writing, but also to have observed very keenly to follow up emotions and facial expressions, as well as tones of voice, and movements of the hands and eyes to reflect certain feelings towards issues, through this commonly termed "body language". In this study, the two assistants were asked to focus on the speakers and write every important point and if they used the tape recorder or video camera, they were asked to take the scene from more than one angle. In the event, participants agreed to be video-taped which allowed recordings of both verbal and non-verbal responses.

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Twenty-one respondents attended the interview, thirteen from the Imam University and eight from the King Saud University. The meeting was begun in the optimal environment provided by the purpose built hall and the researcher sought to remove the respondents' psychological barriers and to initiate confidence. The respondents were thanked for answering the call and reminded that the forum was confidential and that no names would be used for research purposes. After that the goals of this interview were reviewed, its time and some basic rules were agreed before seeking authorization to videotape the proceedings, to which all agreed. The researcher then reviewed some of the definitions of "e-learning" and of "interaction with the content, colleagues and instructors". They then started to pose the third and fourth questions of the study and then the rest of the questions (see Appendix E, F). In this way participants began discussing the neutral topics and then moved to more controversial questions in keeping with advice from writers in the field about starting with general questions then moving to specific ones (Stewart and Shamdasani, 1990). The focus group interviews took three hours with a break, when refreshments were provided. The interviews concluded with thanks to everyone.

After the completion of the interviews the researcher started to transcribe what was expressed. A "transcript", meaning a written record of all the contents of the videotape, took a very long time to produce in full Arabic text, while trying to add non-verbal evidence by description as necessary. This was not translated in full before the application of coding which means transferring the answers and information to specific sub-titles to be related to the themes, then gathering the information together in such a way as to make it possible to classify responses and match them, using the cut and paste technique mentioned by Stewart and Shamdasani (1990). Of course, this stage is the toughest stage of the focus group interview process where time is needed to read the transcript repeatedly. Its importance is because it is the beginning of analysis. Krippendorff (1980) defines the "content analysis" of focus group interviews as "a research technique for making replicable

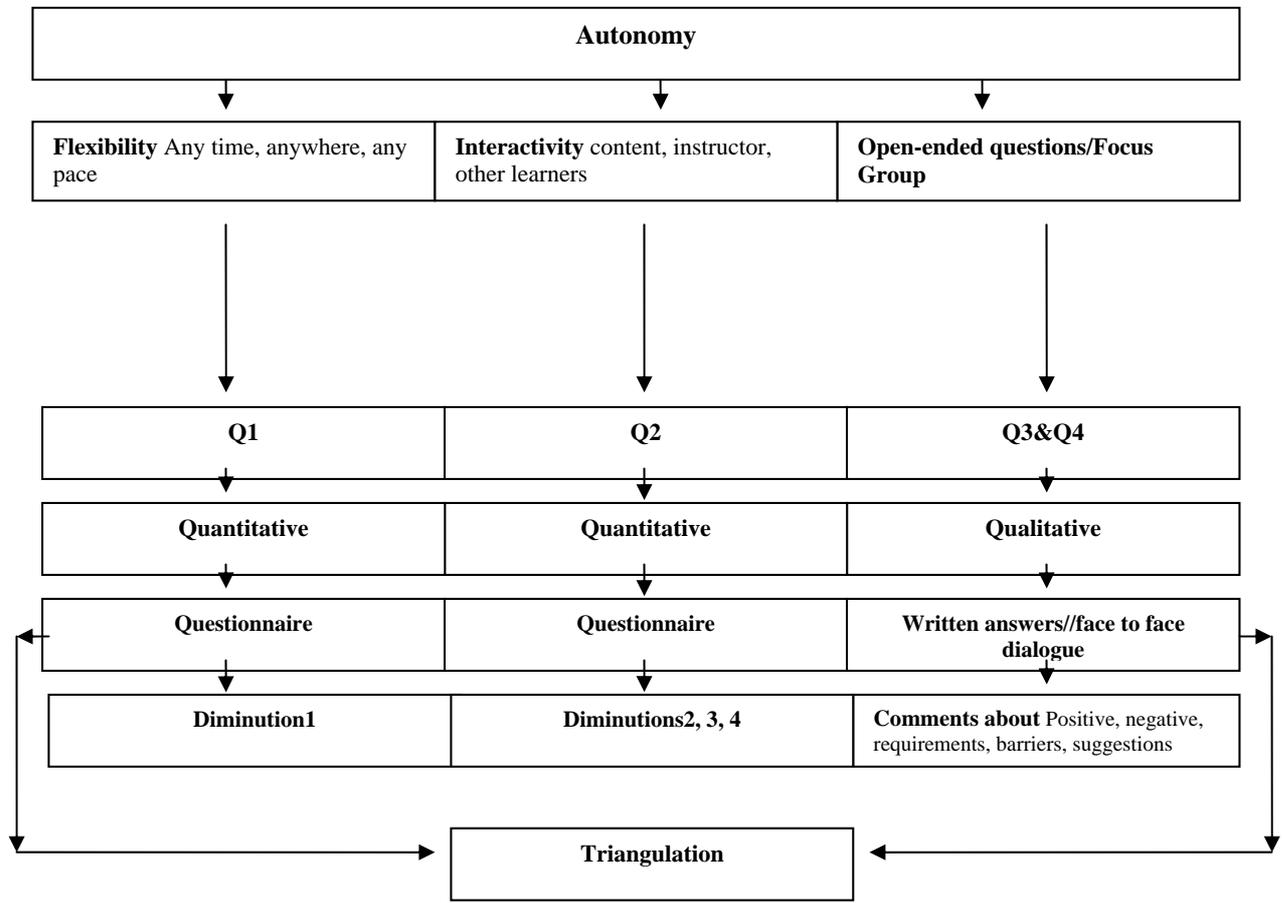
### **Chapter Three: The Methodology**

and valid inferences from data to their context” (p.21). Indeed, focus group data analysis can be done quantitatively or qualitatively based on the goals of investigations. There are many types of analysis: conversation analysis and discursive psychology, induction analysis, logical analysis, pragmatic content analysis, semantic content analysis and sign-vehicle content analysis (Janis, 1965, Stewart and Shamdasani, 1990, Bloor et al. 2001, Puchta and Potter, 2004). This research used a qualitatively based approach for a thematic analysis. In this study themes were identified from the literature and identified and coded in participants responses, then these themes were checked against the data to ensure they were representing participants views. Further themes were identified according to the similarities and differences in students responses which were not represented in the literature. A final check was then made for both accuracy and to reflect on whether the male students’ perceptions were being summarised and reported accurately by reviewing the transcripts and videos.

In total, the field work can be summarized briefly to include gaining access and starting to collect data by questionnaire, followed by the analysis of the questionnaire, then the conduct of the focus group interview followed by transcribing it, coding it and finally analyzing it.

Before closing this chapter, a summary is offered in tabulated form (Figure 3.1) to show the methodology and instruments used for the present study.

Figure 3.1: The methodology and the instruments



Having discussed the methodology used to answer the questions of this research, the instruments used to gather information, the next chapter will outline the results.

**Chapter 4. Results, data analysis and presentation**

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**4.2 Correlation of variables**

**4.3 Factor analysis**

**4.5 The first question**

**4.6 The second question**

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**4.6.3 The extent of learners' perceptions of their interactions with other learners**

**4.6.4 Written open-ended comments added to questionnaires**

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**4.8.1 Requirements**

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**4.10 Summary of the learners' responses to the secondary goal of focus group**

## Chapter Four: Results, data analysis and presentation

### Introduction

This study's aim was to evaluate the effectiveness of the e-learning experience in some universities in Saudi Arabia from male learners' perceptions. Some account was taken of demographic issues to see whether there were any statistically significant differences, extraneous to the universities' e-learning provision that could affect respondents' perception of the effectiveness of their learning. The selected variables were the respondents' specialization, previous learning by e-learning, age and ICT skills. To test this, the demographic data from the questionnaire was used with appropriate statistical methods for each variable depending on the number of the group.

The goal of the research process was to provide data for this evaluation by identifying: the extent of the learners' perceptions of their abilities to learn autonomously through e-learning; the extent of learners' perceptions of their interaction with content, instructors and each other in e learning; the learner's perceptions of e-learning's positives and negatives; the learner's perceptions of barriers facing e-learning and its requirements and their suggestions for the improvement of e-learning.

For each of the above four foci of the main goal, the study posed an appropriate sub-question. Together, the responses to these sub-questions answered the main question of the research which was "to what extent was e-learning effective from male learners' perceptions?"

The sub-questions for the first two foci of the main goal were posed as items on a questionnaire which was distributed to three hundred learners, one hundred fifty from each university. From this sample, there were two hundred and nineteen responses, of which two hundred were unspoiled and suitable for analysis. These questions were asked in a different way in the focus group interviews when sub-questions three and four were also put to the

#### **Chapter Four: Results, data analysis and presentation**

group. This body consisted of twenty one questionnaire respondents who attended from a pool of thirty-six respondents who had agreed to meet for a live discussion. The responses to all four sub-questions were surveyed to answer the main question of the research which was “to what extent was e-learning effective from male learners’ perceptions?”

The content of the four sub-questions follows. The first sub-question talked about autonomous learning through e-learning, asking, “What was the extent of the learners’ perceptions of their abilities to learn autonomously through e-learning?” This was answered through a range of items identified as Dimension 1 “the ability to learn autonomously through e-learning.” This dimension contained eight items.

The second sub-question dealt with the interaction between learners and content, learners and instructors and between the learners themselves by asking “What was the extent of learners’ perception of their interaction with content, instructors and between themselves in e-learning?” This was answered through Dimension 2, 3, 4 “learner-content interaction in e-learning, learner-instructor interaction in e-learning and learner-learner interaction in e-learning.” This dimension was the content of three groups of prompts containing sixteen, seven and seven items respectively.

The third and fourth questions were answered through the focus group interview where the third sub-question was about positives and negatives, and the fourth sub-question about the barriers, facing e-learning and its requirements followed by the learners’ suggestions based on their perceptions of e-learning. The items posed were: “What were the positives and negatives e-learners had encountered?” “What were the requirements for e-learning and what barriers did e-learners face” and “What suggestions could they offer for the

## Chapter Four: Results, data analysis and presentation

improvement of e-learning?” Some of the students, who had agreed to participate, responded through the video-taped focus group interviews.

The results of the questionnaire and the focus group interviews were used to discover the learners’ perceptions of e-learning’s effectiveness. In order to relate relevant items to each other, three indices were used: the question number, the questionnaire items related to the question or responses of the focus group interviews and the dimension of reported interaction, whether with content, instructors or peers. The table below was useful to simplify the sub-questions and place a dimension number against the number of items included in the questionnaire to respond to each sub-question. The following table (Table 4.1) shows how each dimension matched the sub-questions and the questionnaire items or focus group responses.

Table 4.1: The study’s questions and how responses were located

Questions	Tool	Di'ons NO.	Di'ons	Items
1	questionnaire	1	the ability to learn autonomously through e-learning	8
2	questionnaire	2	learner-content interaction in e-learning	16
	questionnaire	3	learner-learner interaction in e-learning	7
	questionnaire	4	learner-instructor interaction in e-learning	7
3	focus group	-	positives and negatives	-
4	focus group	-	barriers, requirements and suggestions	-

In the pursuit of this plan to discover more in-depth information about the topics being evaluated, data was collected through the use of both the questionnaire and the focus group interviews. This chapter presents the results of the data collected in this study.

Before starting presenting the fourth question, the population, the sample and factor analysis will be outlined.

## Chapter Four: Results, data analysis and presentation

### 4.1 The population and the sample

In fact, to study any problem, the population must be identified. It is important to find out its size. Burns, (2000), defines “population” as “a complete set of all those things (people, numbers, societies, bacteria, etc). Which completely satisfy some specification,” or “the total number of potential units for an observation” (p.83).

The population in this study were the university students in Kingdom of Saudi Arabia and the accessible population were the students of King Saud and the Imam Universities both of which supplied the figures that appear in the following (Table 4.2).

Table 4.2 KSU and IMU students 2008/2009

university	No of student enrolments 2008/2009		Total no of students 2008/2009		No of faculty members	
	Gender	Number	Gender	Number	Nationality	Number
KSU	Male	11076	Male	42933	Saudi	1409
					Non-Saudi	1045
	Female	6615	Female	29215	Saudi	564
					Non-Saudi	267
	Total	17691	Total	72148	Total Saudi	1973
					Non-Saudi	1312
				Total	3285	
IMU	Male	11642	Male	21937	Saudi	846
					Non-Saudi	242
	Female	4674	Female	14043	Saudi	223
					Non-Saudi	17
	Total	16516	Total	36016	Total Saudi	1069
					Non-Saudi	259
				Total	1328	

#### **Chapter Four: Results, data analysis and presentation**

The population, therefore, represented a cross section of the subjects studied at the two universities at every level. From this group a sample was to be drawn. Burns (2000) defines the “sample” as “any part of population regardless of whether it is representative or not” (p.83) and Mertens, (2009) refers to it as “the method used to select a given number of people or things from the population” (p.309). “ Sample” means a part of all that are representative of a large population and who share its relevant characteristics. It is difficult to select properly from a large research population, because of limitations in surveying its members in a comprehensive manner. A certain number of them can be selected in accordance with certain principles and criteria established for the so-called sample and the most important condition for selecting the sample is homogeneity the similarity between the members of the sample and the remaining population. This one factor will help towards the clarity of results and the credibility of the study. Note that this homogeneity is not total but proportional. The importance of selecting the sample is equal to the importance of selecting the methodology (Cohen et al. 2004). However, it remains true that the representation of the population by the sample cannot be without dispute (Wellington, 2003).

How to determine the optimal size of the sample is also a controversy among researchers. There are different ratios for the size of the sample to the population such as 1%, 5% and 10% which offer confidence levels of 99% 95% 100% and so on (Obodat et al. 1996, Alassaf, 1998, Alashari, 2007). As a matter of fact, the size of the sample is dictated by several factors such as: the nature of the research topic, its importance and its objectives, and the social, political and economic context of the research. There is no fixed rule to standardize the sample size, but it is known that a large sample size helps to reduce sample errors in the selection process and its representation will be more accurate Note that there are sites that help to give the size of the sample if you input the total population count. But

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it is known that larger samples produce smaller errors and the opposite is also to be expected (Kerlinger, 1986).

Although, the related literature mentioned many ways to withdraw a sample, the most important ones used in social studies are: random sample including simple, systematic, stratified and cluster. Others are non-random sample including purposive and accidental. For the present study, random sampling was chosen by numerical selection from a large field entailing equal opportunities for all members of the population to be chosen, which gave the best chance to get an unbiased sample. In spite of this, the technique sometimes produces some errors such that the difference between the sample mean and the population mean. Such errors can be overcome by increasing the size of the sample. As well as such a bias arising from inappropriate selection of the sample type, errors can appear when the researcher is unable to reach the sought out sample so a change is made in an attempt to process any sample within the given time and effort boundaries of the study. The result of this error is misleading, making the sample unrepresentative of the population (Obadat et al. 1996, Aweys, 1999, Alassaf, 1998, Burns, 2000, Alashari, 2007).

In the case of this research, from a known population obtained from a full list of those students who were engaged in e-learning, a systematic random sample was adopted from the total number listed. The proposed size of the sample was one hundred fifty students from each university, a total of three hundred. However the size of the population from which each sample was to be drawn differed between the two universities as shown in Table (4.3) below. To ensure the same chance for each learner to be chosen for the withdrawal process and that the samples were equally spread across the populations, each population was divided by the sample; the result of this division was 16 for KSU and 34 for IMU. These two figures 16 and 34 are the difference between each choice and the next. This was repeated through each list, from each university. The selection continued until all

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members of each sample were withdrawn from each list. To accommodate these selections the two random start points from which withdrawals were counted were less than 16 and 34 in respect of each list.

Table 4:3 The percentage of questionnaires suitable for use

Universities	e-learners	sample	Returned Questionnaires	%Returned Questionnaires	Questionnaires suitable for analysis	% unspoiled returns
<b>KSU</b>	1622	150	105	70%	100	66.5 %
<b>IMU</b>	3422	150	114	76%	100	66.5 %
<b>Total</b>	5044	300	219	73%	200	66.5 %

The sample for the focus group interview, its size and its choice is a controversial issue in the literature. Some of the researchers recommended six to eight and others eight to ten, whilst others said eight to twelve and others up to sixteen ( McLafferty, 2004). The sample in this study was ten per cent of the questionnaire sample, which was the lowest required in a sample for a focus group interview within a mixed approach (Gay and Airasian, 2000). Some consideration was mentioned, in the literature, about getting a sample that is truly representative of the population required by the nature of the study and the target data. For this study, such a sample was obtained through the returned questionnaires all of which carried an invitation to those who wish to participate in the focus group interview. There were thirty-six respondents who agreed to this opportunity. Nineteen were from King Saud University, and seventeen were from the Imam University. The number who turned up on the day of the interview was twenty-one and they represented 58% from those who were invited. Table (4.4) gives more details of the interviewee percentage.

Table 4.4: The number of interviewees as percentages of the full sample

universities	Sample	Quest'air Returns	Interested to participate	Actual interviewees in attendance	%Interviewees in attendance
<b>KSU</b>	150	105	19	8	42%
<b>IMU</b>	150	114	17	13	76%
<b>Total</b>	300	219	36	21	58%

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Having discussed the guidelines in the literature for the selection of a research sample and having shown how this was done for the present study, and examination of the variables within the selected sample will be offered below.

### **Variables within the sample**

The sample chosen for this study displayed some of the variables that were found to be significant in the related literature. This section clarifies the presence of those variables.

The variables applied to this sample have been selected with reference to the literature (Alarfaj, 2001, Alferaihi, 2003, Sawaan 2005, Alzamil, 2006, Alaugab, 2007), and from what appeared during the pilot study and what appeared in the Higher Education Statistics; particularly for these two universities. In regard to specialization, Arts and Science was considered a key division because they are the original specializations in Saudi higher education, and other specializations fall under them yielding a two part categorization of students that is used for many statistical and administrative purposes. In respect of age, three groups were selected between the lower and higher limits for undergraduate students in Saudi Arabia, where they finish high school at the age of 19 years, and may continue to the University until they are 26 years of age, so this period was divided to cover each category by about 3 years of student university life. Regarding previous e-learning, there were only two possible answers, either no or yes, and it is beyond the scope of this study to query the number or intensity of previous courses. The learners in this study were asked to self-assess their ICT skills so a well known skill classification was applied: beginner, intermediate, and skilled levels. This classification omits the total absence of such skills as they form a part of everyday life in this era of technological development.

Because subject specialization had been cited as a possibly significant factor within the population of this study, some analysis was made of this factor. The results of the analysis

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are shown in Table (4.5) below. And the figures are displayed differently in Figure (4.5).

Table 4.5: Distribution according to specialization

specialization	Frequency	percent
Art	116	58%
Science	84	42.2%
Total	200	100%

It can be seen from above that: 58% of the sample is composed of Arts students and 42.2% consists of Science students.

Another factor which was found to be significant in the literature was previous experience of e-learning. The table and figures below show the presence or absence of this factor in the sample used for this research.

Table 4.6: Distribution according of previous learning by e-learning

previous learn by E- learning	Frequency	percent
No	107	53.5%
Yes	93	46.5%
Total	200	100%

It can be seen from the above that: 53.5% of the sample is composed of nil previous learning by e-learning whilst 46.5% had previously learned by this method.

The third factor identified by the literature as significant to e-learning was age. The sample for this research was screened for this factor with results shown in the following table and figures.

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Table 4.7 Distribution according to age

Age	Frequency	percent
22& Less	111	55.5%
23-25	36	18.0%
26&Above	53	26.5%
Total	200	100%

It can be seen from above that: 55.5% of the sample was composed of learners aged 22 and under whilst 18.0% consisted of those who were between the ages of 23 and 25 and 26.5% consisted of learners aged 26 and above.

The fourth factor of significance as found in the literature was ICT skills. The following table and figures show the distribution within the sample of those with or without previous ICT skills.

Table 4.8 Distribution of ICT skills

ICT Skills	Frequency	percent
Beginner	37	18.5%
Intermediate	105	52.5%
Skilled	58	29.0%
Total	200	100%

It can be seen from the above table that 18.5% of the sample is composed of ICT beginners, 52.5% consists of intermediate level users and 29.0% consists of those who were skilled in ICT.

The variables used for this research were specialisation, previous learning by e-learning, and age group and ICT skills. Two broad groups of specialization were adopted from the procedures of the universities in Saudi Arabia: Arts and Sciences and the respondents were almost equally divided between them (58% of the sample being Arts students and (42.2% of Science students). Just over half (53.5%) of the sample had no previous e-learning whilst

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just under half (46.5%) had previously learned by this method. The youngest age group (19-22 years) was the most common age group for participants comprising just over half of the sample (55.5%), the other half being divided between the medium and older age groups (18.0% between the ages of 23 and 25 and 26.5% aged 26 and above). Regarding ICT skills, the higher proportion, over half (52.5%) considered themselves intermediate level users whilst smaller proportion (29.0%) consisted of those who were skilled in ICT and a slightly smaller proportion (18.5%) of the sample was composed of ICT beginners. Regarding focus group participation, 36 respondents agreed to attend of which the number who turned up on the day of the interview was 21. These participants were not screened separately for representative variables.

Having discussed the population and the sample of the study, the next section will outline the correlation of variables.

### **4.2 Correlation of variables**

Some response categories were offered on the questionnaire to identify the effect of some selected variables on learner's perceptions. The variables considered were specialization, previous learning by e-learning, age and ICT expertise. Two options, "Arts" or "Science, were given to find the difference made to the perception by their specialization. The learners' previous experience of learning by e-learning was requested by a "no" or "yes" option. Their ages were categorized in three bands: 22 and below, 23 to 25, 26 and above. ICT skills were queried on a three point scale of beginner, intermediate or skilled, with respondents rating themselves rather than being referenced to external standards. The categories used for each variable were chosen benefiting from literature and from what appeared during the pilot study and what appeared in the Higher Education Statistics, particularly for the two universities.

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By using the Statistical Package for Social Science SPSS “T-tests” and A One-Way Analysis of Variance “ANOVA” were carried out on the raw scores for each item depending on the number in the group. Furthermore Scheffe tests were carried to indicate the source of differences found in ICT Skills. The choice and implementation of these tests are further discussed in the methodology (Chapter 3, section 3.3.1.5.2). The results that were analysed from the completed questionnaires are given in the following section.

### 4.2.1 Specialisation

To find the difference made to respondents’ answers by their specialization (Art or Science) "T-test" was used and gave the following results:

Table 4.9: The difference of specialization shown by “T test”

	Specializa- tion	N	Mean	Std.Devia- -tion	t	Df	Sig (2-tailed)																																												
<b>The ability to learn autonomously through e-learning</b>	Art	116	32.7586	4.91426	-.727	198	.468																																												
	Science	84	33.2857	5.25855				<b>Learner-content- interaction in e-learning</b>	Art	116	67.8190	9.60217	.048	198	.962	Science	84	67.7500	10.67581	<b>Learner-instructor- interaction in e-learning</b>	Art	116	26.8362	5.5734	.800	198	.424	Science	84	26.1786	5.95194	<b>Learner-learner- interaction in e-learning</b>	Art	116	27.7845	5.33700	.964	198	.336	Science	84	27.0000	6.12323	<b>Total</b>	Art	116	155.1983	18.93936	.327	198	.744
<b>Learner-content- interaction in e-learning</b>	Art	116	67.8190	9.60217	.048	198	.962																																												
	Science	84	67.7500	10.67581				<b>Learner-instructor- interaction in e-learning</b>	Art	116	26.8362	5.5734	.800	198	.424	Science	84	26.1786	5.95194	<b>Learner-learner- interaction in e-learning</b>	Art	116	27.7845	5.33700	.964	198	.336	Science	84	27.0000	6.12323	<b>Total</b>	Art	116	155.1983	18.93936	.327	198	.744	Science	84	154.2143	23.51573								
<b>Learner-instructor- interaction in e-learning</b>	Art	116	26.8362	5.5734	.800	198	.424																																												
	Science	84	26.1786	5.95194				<b>Learner-learner- interaction in e-learning</b>	Art	116	27.7845	5.33700	.964	198	.336	Science	84	27.0000	6.12323	<b>Total</b>	Art	116	155.1983	18.93936	.327	198	.744	Science	84	154.2143	23.51573																				
<b>Learner-learner- interaction in e-learning</b>	Art	116	27.7845	5.33700	.964	198	.336																																												
	Science	84	27.0000	6.12323				<b>Total</b>	Art	116	155.1983	18.93936	.327	198	.744	Science	84	154.2143	23.51573																																
<b>Total</b>	Art	116	155.1983	18.93936	.327	198	.744																																												
	Science	84	154.2143	23.51573																																															

Table 4.9 shows that there were no statistically significant differences in any dimension between the means of the two groups. [Where "T" value was -.727 and ‘Sig’ was .468 in Dimension One and ‘T’.048, ‘Sig’ .962. in Dimension Two, and ‘T’ .800, ‘Sig’ .424 in Dimension Three, and ‘T’.964, ‘Sig’ .336 in Dimension Four.] This shows that none of them was statistically significant, which indicates that specialization might not have had an effect on the responses of learners in any of the four dimensions.

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Having discovered no statistically significant differences across the dimensions for subject specialization, the next section considers the effect of previous learning by e-learning.

### 4.2.2 Previous learning by e-learning

To find the difference made to learners' responses by their previous learning through e-learning "T-test" was used on two selected categories (No, Yes). These categories were chosen after the pilot study, which showed that the population of more finely graded different categories than No and Yes would have been too slight to yield a calculable result.

The selected test was done and it gave the results shown on Table 4.10.

Table 4.10: The difference of previous learning by e-learning shown by "T-test"

	Previous learn by e-learning	N	Mean	Std.Dev.	t	df	Sig (2-tailed)
<b>The ability to learn autonomously through e-learning</b>	No	107	33.6916	4.89399	2.155	198	.032
	Yes	93	32.1613	5.13998			
<b>Learner-content- interaction in e-learning</b>	No	107	68.2430	9.87549	.683	198	.495
	Yes	93	67.2688	10.25664			
<b>Learner-instructor- interaction in e-learning</b>	No	107	25.6542	5.78238	-2.427	198	.016
	Yes	93	27.6022	5.51705			
<b>Learner-learner- interaction in e-learning</b>	No	107	27.0654	5.85400	-1.041	198	.299
	Yes	93	27.9032	5.46742			
<b>Total</b>	No	107	154.6542	20.82592	-.095	198	.925
	Yes	93	154.9355	21.16642			

Table (4.10) shows that, while there were no significant differences in Dimensions Two and Four, there were significant statistical differences between the means shown for the two groups in Dimensions One and Three [where the "T" value was 2.155, 'Sig' .032 in Dimension One, and 'T' -2.427, 'Sig' .016 in Dimension Three. These results are opposed to 'T'.683, 'Sig'.495 in Dimension Two and 'T' -1.041, 'Sig' .299 in Dimension Four.]

Therefore, the existence of significant statistical differences at the level of 0.5 in Dimension One (The ability to learn autonomously through e-learning) in favour of those who said No may indicate that no previous learning by e-learning might have influenced

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the learners' responses. In Dimension Three (learner-instructor interaction) previous e-learning experiences may have been a positive factor for those who said "Yes". Therefore, having learned previously by e-learning might have influenced the answers to these responses in this dimension.

This is the first significant variable to be identified so, although subject specialization does not affect learners' perceptions of the effectiveness of e-learning, their previous exposure to e-learning does have some effect on the extent of their perceptions. The next sub-section considers the impact of their ages.

### 4.2.3 Age

To find the difference made to learners' responses by their ages (22 and below, 23 to 25, 26 and above) the One-way "ANOVA" test was used and the results are shown on the following table (4.11):

Table 4.11: The difference of age shown by "ANOVA" test

		Sum of Squares	df	Mean squares	F	Sig.
<b>The ability to learn autonomously through in e-learning</b>	Between groups	65.296	2	32.648	1.281	.280
	Within Groups	5020.624	197	25.485		
	Total	5085.920	199			
<b>Learner- content- interaction in e-learning</b>	Between groups	125.859	2	62.930	.622	.538
	Within Groups	19937.321	197	101.205		
	Total	20063.180	199			
<b>Learner-instructor- interaction in e-learning</b>	Between groups	152.290	2	76.145	2.351	.098
	Within Groups	6380.990	197	32.391		
	Total	6533.280	199			
<b>Learner-learner- interaction in e-learning</b>	Between groups	97.057	2	48.528	1.513	.223
	Within Groups	6320.538	197	32.084		
	Total	6417.595	199			
<b>Total</b>	Between groups	296.206	2	148.103	.336	.715
	Within Groups	86899.546	197	441.114		
	Total	87195.755	199			

Table (4.11) shows that age did not affect the responses of the study sample. The "F" value was 1.281, 'Sig' .280 in Dimension One which is statistically insignificant. Similarly

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statistically insignificant in Dimension Two were ‘F’ value .622 and ‘Sig’ .538. Also “F” value in Dimension Three was 2.351 and ‘Sig’ .098 was statistically insignificant. In Dimension Four “F” 1.513 and ‘Sig’ .223 are statistically insignificant. This indicates that age might not have had an effect on the learners’ responses in any of the dimensions.

Having eliminated the significance of both subject specialisation and age, previous experience of e-learning remains the only significant variable so far. The next sub-section considers the impact of ICT skills on the learners’ perceptions of the effectiveness of e-learning.

### 4.2.4 ICT Skills

To find the differences made to learners’ responses by their ICT skills, self-rated as beginner, intermediate or skilled, One-way "ANOVA" was used and the results are shown on the following table:

Table 4.12: The difference of ICT Skills shown by “ANOVA” test

		Sum of Squares	df	Mean squares	F	Sig.
<b>The ability to learn autonomously through e-learning</b>	Between groups	224.568	2	112.284	4.550	.012
	Within Groups	4861.352	197	24.677		
	Total	5085.920	199			
<b>Learner- content interaction in e-learning</b>	Between groups	153.743	2	76.872	.761	.469
	Within Groups	19909.437	197	101.063		
	Total	20063.180	199			
<b>Learner-instructor interaction in e-learning</b>	Between groups	100.806	2	50.403	1.544	.216
	Within Groups	6432.474	197	32.652		
	Total	6533.280	199			
<b>Learner-learner interaction in e-learning</b>	Between groups	.691	2	.345	.011	.989
	Within Groups	6416.904	197	32.573		
	Total	6417.595	199			
<b>Total</b>	Between groups	346.703	2	173.352	.393	.675
	Within Groups	86849.052	197	440.858		
	Total	87195.755	199			

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The results of the one way ANOVA Test were subjected to further analysis using the Post Hoc Test Scheffe Test in order to find the source of difference found in ICT skills. The results of this second test are shown below.

Table 4.13: Post Hoc Test Scheffe (The ability to learn autonomously through e-learning)

ICT Skills		Beginner	Intermediate	Skilled	Total
ICT Skills	Mean	32.3243	32.2952	34.6379	32.9800
Beginner		32.3243			
Intermediate		32.2952			
Skilled		34.6379		*	
Total		32.9800			

\*The mean difference is significant at the .05 level.

Tables (4.12 and 4.13) show that there is a significant difference in Dimension One in favour of those who rated themselves as skilled Where, "F" value was 4.550, 'Sig' .012. There were no significant statistical differences between the means shown for any other dimension. Where, "F" value was .761, 'Sig' .469 in Dimension Two and "F" 1.544, 'Sig' .216 in Dimension Three and "F" .011, and 'Sig' .989 in dimension Four. Therefore, ICT skills have influenced the learners' responses in Dimension One.

### 4.2.5 The significant and non-significant difference of all variables

E-learning has been shown as a positive learning experience in the perception of the male learners consulted for this study. The effectiveness of their e-learning has not been attributed to pre-existing variables except in the case of previous experience of e-learning and ICT skills. Before moving to present and discuss the answer to the questions of this study, the significant and non-significant difference of all variables are summarized on Table (4.14)

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Table 4.14: Significant and non-significant differences of all variables

Factors	D1:The ability to - learn autonomously through e-learning	D2:Learner- content- interaction in e-learning	D3:Learner- instructor- interaction in e-learning	D4:Learner- learner- interaction in e-learning
Specialisation (Art, Science)	non-significant difference	non-significant difference	non-significant difference	non-significant difference
Age (22& Less, 23-25, 26&Above)	non-significant difference	non-significant difference	non-significant difference	non-significant difference
Previous learn by e-learning (No,Yes)	<b>Significant difference in favour of those said NO</b>	non-significant difference	<b>Significant difference in favour of those said YES</b>	non-significant difference
ICT'S Skill (Beginner, Intermediate, Skilled)	<b>Significant difference in favour of those who rated themselves as skilled</b>	non-significant difference	non-significant difference	non-significant difference

As clear from above table, previous experience of e-learning makes a difference in Dimensions One and Three whilst ICT skills made a difference in Dimension One only. Learners' perceptions of the effectiveness of e-learning were enhanced by the novelty of their experience when they had no previous exposure to it. Those who had learned through e-learning previously perceived its effect positively on their interaction with their instructors. Similarly, those learners who reported previous ICT skills, perceived an effect on their ability to learn autonomously through e-learning.

Having considered the demographic data, this report moves on to the dimensions and specified in the description of the questionnaire. The items in each dimension were subjected to factor analysis to ensure the integrity of each dimension.

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### 4.3 Factor analysis

This section reports the use of factor analysis to check the structure of the dimensions of the questionnaire to see whether the results of the factor analysis supported the intended dimensions or not. Questionnaire items were included in this analysis to identify any possible underlying dimensions that might be associated with different patterns of responses of learners. Principal component factor analysis with varimax rotation was applied and produced five factors; the fifth one was discounted because it had only two items (25 and 32). So four factors remained and each of these four factors could be named in their original form, as in the questionnaire. Table 4.15 below shows that the four factors together accounted for 56.5 percent of variance in response, the largest individual share of variance being for factor one (35.3)

Table 4.15: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.435	35.354	35.354	13.435	35.354	35.354	7.429	19.550	19.550
2	4.634	12.194	47.548	4.634	12.194	47.548	4.804	12.643	32.193
3	1.780	4.683	52.231	1.780	4.683	52.231	4.491	11.820	44.013
4	1.626	4.280	56.510	1.626	4.280	56.510	4.470	11.764	55.776
5	1.559	4.103	60.613	1.559	4.103	60.613	1.838	4.837	60.613
6	1.430	3.762	64.376						
7	1.124	2.957	67.332						
8	.956	2.516	69.848						
9	.828	2.179	72.027						
10	.748	1.968	73.994						

Extraction Method: Principal Component Analysis.

Table 4.16 below shows the rotated matrix for these factors and the value of each item, loaded and sorted by size.

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Table 4.16 Rotated component matrix

	Component				
	1	2	3	4	5
In e-learning I can learn anytime, anywhere.			.548		
In e-learning I can learn based on my pace.			.669		
E learning presents what is suitable for my learning style			.652		
E-learning enables me to review the foregoing any time.			.723		
E-learning presents immediate feedback.			.720		
In e-learning I am able to self-evaluate.			.664		
E-learning presents suitable technical support			.542		
E-learning eases the process of learning.	.703				
E-learning encourages me to learn more.	.720				
E-learning increases my capacity.	.632				
E-learning increases the motivation to learn.	.708				
E-learning increased my productivity.	.722				
E-learning helped me to manage my time and self discipline.	.542				
My specific learning time in e-learning was spent fully in learning	.524				
I prefer to do the tasks and tests through e-learning tools.	.557				
I prefer to obtain my score through e-learning tools.	.555				
My results in e-learning were better compared to those I received in traditional learning	.553				
E-learning met my needs.	.595				
E-learning met my expectations.	.565				
I enjoyed learning by e-learning.	.645				
I felt more freedom learning by e-learning.	.554				
E-learning has increased my confidence.	.666				
I want to take other courses by e-learning	.673				
I prefer communication with the instructor by e learning compared to face to face.					.839
E-learning has increased communication with the instructor.				.737	
I built a productive relationship with the instructor via e-learning.				.761	
E-learning eased discussion with my instructor.				.816	
E-learning encouraged me to discuss with my instructor.				.774	
I enjoyed contacting my instructor via e-learning.				.712	
In e learning I received more attention from my instructor				.688	
I prefer to communicate with my classmates by e learning compared to face to face.					.834
E-learning has increased my communication with other learners.		.756			
I built a productive relationship with other learners via e-learning.		.741			
E-learning eased discussion with my classmates.		.840			
E-learning encouraged me to participate in discussion with my classmates.		.818			
I enjoyed contacting my classmates via e-learning.		.758			
E-learning has increased cooperation among learners.		.786			

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

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The table above shows that 16 items were loaded on the first factor. These items reflected interactivity with content, this factor was named “learner- content- interaction in e-learning”. Six items were loaded on the second factor. These all reflected learner to learner communication in e-learning; this factor was called “learner-learner-interaction in e-learning”. Seven items were loaded on the third factor. These all reflected to autonomy in e-learning; this factor was called “the ability to learn autonomously in e-learning”. Factor four contained six items relating to dealing with instructors in the e-learning environment; this factor was called “learner-content-interaction in e-learning”.

It is noticeable from the table that every item was loaded on one factor and there were no items loaded on more than one factor. Further, there was a high degree of similarity between the number and the structure of the dimensions and the items presented within them on the questionnaire and the results of the factor analysis. This indicated clearly that the factor analysis supported the structure of the questionnaire.

Having established by the factor analysis that the dimensions were robust, each one will be presented below by using a scale consisting of five points (Table 4.17). Taken from Likert’s scale, the highest was *strongly agree* and the lowest was *strongly disagree*.

Table 4.17: the scale

Scale	Meaning	App.
5 – 4.21	Strongly Agree	(SA)
4.20 - 3.41	Agree	(A)
3.40 - 2.61	Neutral	(N)
2.60 - 1.81	Disagree	(D)
1.80 - 1	Strongly Disagree	(SD)

This scale enables a detailed report by classifying the learners’ responses in the five categories, where applicable (the first and second questions).

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### 4.4 The first question

This section reports respondents' answers to the sub-question, "What was the extent of learners' perception of their abilities to learn autonomously through e-learning?" Table (4.18) offers a record of learners' ratings of their ability to learn through e-learning and it is followed by a detailed comparison of the responses received.

Table 4.18: Dimension 1: the ability to learn autonomously through e-learning

Order	Items	Frequency %	S.A	A	N	D	S.D	Mean	Std. Deviation	Items No.
			(5)	(4)	(3)	(2)	(1)			
1	In e-learning I can learn anytime, anywhere.	F	102	66	23	9	-	4.31	.846	2
		%	51.0	33.0	11.5	4.5	-			
2	E-learning enables me to review my learning any time.	F	104	60	29	6	1	4.30	.862	5
		%	52.0	30.0	14.5	3.0	.5			
3	In e-learning I can learn at my own pace.	F	89	82	22	4	2	4.27	.813	3
		%	44.5	41.0	11.0	2.0	1.0			
4	In e-learning my learning is personalized.	F	86	81	24	7	2	4.21	.860	1
		%	43.0	40.5	12.0	3.5	1.0			
5	E-learning permits immediate feedback.	F	77	70	43	9	1	4.06	.908	6
		%	38.5	35.0	21.5	4.5	.5			
6	E learning permits what is suitable for my own learning style	F	73	78	39	9	1	4.06	.886	4
		%	36.5	39.0	19.5	4.5	.5			
7	E-learning enables me to self-evaluate.	F	58	88	35	17	2	3.92	.945	7
		%	29.0	44.0	17.5	8.5	1.0			
8	E-learning presents suitable technical support	F	69	63	47	16	5	3.87	1.056	8
		%	34.5	31.5	23.5	8.0	2.5			

As a survey of the above results show, the mean score of all items came between 4.31 and 3.87 which places all the responses between a strongly agree and agree, the first four items being answered as strongly agree and the last four as agree.

Whereas the average mean for this dimension was 4.12 (agree), the highest placed, in terms of dimension order, was the item regarding e-learning learners' ability to learn without

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restrictions of the time and the place. As Table (4.18) above shows, the learners expressed the highest mean in response to, “In e-learning I can learn anytime, anywhere”. This was rated at 4.31 (strongly agree). Very close to this, ranked second by mean score was the item concerning reviewing previous learning “E-learning enables me to review my learning any time”. This was rated at 4.30 (strongly agree).

In the third and fourth places respectively came the two items about learners’ ability to individualize their study programme: “In e-learning I can learn at my own pace” and “In e-learning my learning is personalized” at the means 4.27 and 4.21 (both strongly agree).

In the fifth and the sixth positions fell the items relating to obtaining prompt feedback and presenting what fits learners’ preferred styles: “E-learning permits immediate feedback” and “E learning permits what is suitable for my own learning style” were ranked at the same mean 4.06 (agree). This was followed by the items regarding e-learning’s facility to allow them to evaluate themselves in the seventh place “E-learning enables me to self-evaluate” at mean 3.92 (agree). Finally, in the eighth place, the item on the subject of receiving technical support, “E-learning presents suitable technical support” came at the lowest mean, being rated at 3.87 (agree).

This dimension, “the ability to learn autonomously through e-learning” is the most important dimension because the learners’ ability to self-learn is a necessary factor for e-learning to take place. This section of the report shows that, overall, the learners’ perceptions of their ability to learn autonomously showed that they could use the flexibility of e-learning (time, place and pace). They felt they were able to access suitable materials for their own learning style. Technical support and evaluation features were rated on a lower scale by the respondents.

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Having reported on the extent of learners' perception of their ability to learn through e-learning, their responses to items about interactive facilities will be considered.

### **4.5 The second question**

This section reports respondents' answers to the sub-question, "What was the extent of learners' perception of their interaction with content, instructors and between themselves in e-learning?" The results are divided into three sub-sections in order to distinguish between the learners' perceptions of their interactions with content, instructors and the other learners. Each sub-section contains a table of the respondents' ratings followed by a comparison of the results for each item.

#### **4.5.1 The extent of learners' perceptions of their interaction with content**

The learners responded to a number of items that were designed to discover the extent of their perceptions of interacting with the content of their e-learning. This dimension (Learner-content-interaction in e-learning) was the one in which the learners' responses expressed the highest average mean, being rated at 4.24, placing it above the other dimensions. Their responses are tabulated here and a detailed comparison of their ratings follows.

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Table 4.19: Dimension 2: Learner- content interaction in e-learning

Order	Items	Frequency %	S.A	A	N	D	S.D	Mean	Std. Deviation	Items No.
			(5)	(4)	(3)	(2)	(1)			
1	I feel more freedom learning by e-learning.	F	120	63	15	2	-	4.51	.680	22
		%	60.0	31.5	7.5	1.0	-			
2	E-learning encourages me to learn more.	F	120	64	13	3	-	4.50	.687	10
		%	60.0	32.0	6.5	1.5	-			
3	E-learning eases the process of learning.	F	120	60	16	1	3	4.47	.789	9
		%	60.0	30.0	8.0	.5	1.5			
4	I prefer to obtain my score through e-learning tools.	F	121	53	17	5	4	4.41	.898	17
		%	60.5	26.5	8.5	2.5	2.0			
5	E-learning increases my confidence.	F	108	59	19	10	4	4.28	.969	23
		%	54.0	29.5	9.5	5.0	2.0			
6	E-learning increases my productivity.	F	99	65	27	5	3	4.27	.896	13
		%	49.5	32.5	13.5	2.5	1.5			
7	I want to take other courses by e-learning	F	102	64	22	9	3	4.27	.932	24
		%	51.0	32.0	11.0	4.5	1.5			
8	I enjoy learning by e-learning.	F	95	70	29	3	3	4.26	.868	21
		%	47.5	35.0	14.5	1.5	1.5			
9	E- learning encourages me to increase learning time .	F	105	54	31	7	3	4.25	.946	15
		%	52.5	27.0	15.5	3.5	1.5			
10	E-learning increases my motivation to learn.	F	92	66	37	4	1	4.22	.852	12
		%	46.0	33.0	18.5	2.0	.5			
11	E-learning meets my needs.	F	87	74	31	7	1	4.19	.861	19
		%	43.5	37.0	15.5	3.5	.5			
12	E-learning increases my capacity.	F	90	67	33	9	1	4.18	.901	11
		%	45.0	33.5	16.5	4.5	.5			
13	E-learning meets my expectations.	F	79	80	34	4	3	4.14	.874	20
		%	39.5	40.0	17.0	2.0	1.5			
14	I prefer to do the tasks and tests through e-learning tools.	F	85	63	34	13	5	4.05	1.041	16
		%	42.5	31.5	17.0	6.5	2.5			
15	E-learning helps me with time management and self discipline.	F	85	58	35	17	5	4.00	1.082	14
		%	42.5	29.0	17.5	8.5	2.5			
16	My results in e-learning were better when compared to those I received in traditional learning	F	64	73	53	11	9	3.81	1.086	18
		%	32.0	31.5	26.5	5.5	4.5			

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In this dimension, as in the one previously reported, the respective items' means' came between strongly agree and agree where the highest item got 4.51 and the lowest got 3.81. From Table (4.19) above, we can say that ten items in this dimension were rated as strongly agree, whilst six items were rated as agree. Details of the ratings of each item follow.

The items concerning lack of restrictions came into the first few places. "I feel more freedom learning by e-learning" had a high mean of 4.51 (strongly agree) and very close to it in second position was the encouragement to learn more "E-learning encourages me to learn more", rated at mean 4.50 (strongly agree).

After that learners' responses placed the item "E-learning eases the process of learning" in third position at mean 4.47 (strongly agree), followed in fourth place by the desire to be scored electronically, "I prefer to obtain my score through e-learning tools". This item had a mean of 4.41 "strongly agree".

The capacity of e-learning to enhance self-confidence, "E-learning increases my confidence" was positioned fifth at mean 4.28 (strongly agree). This was closely followed by the effect of rising production in the e-learning, "E-learning increases my productivity" and an interest in taking new courses by e-learning "want to take other courses by e-learning" at equal mean scores of 4.27 (strongly agree).

Very closely and directly after these responses, in, the eighth and ninth places, came, learners' enjoyment of e learning and its impact on increasing learning time: "I enjoy learning by e-learning" and "E- learning encourages me to increase learning time" at means 4.26 and 4.25 respectively (strongly agree).

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The impact of e-learning on motivation “E-learning increases my motivation to learn” was placed tenth at mean 4.22 (strongly agree). In the eleventh and twelfth places were the items on the topic of meeting the learners’ needs: “E-learning meets my needs” and escalating capacity “E-learning increases my capacity”. These came at close mean scores of 4.19 and 4.18 (both agree).

In thirteenth position the item regarding e-learning meeting the expectations of learners, “E-learning meets my expectations” was rated at mean 4.14 (agree). The learners’ choice of doing their homework electronically, “I prefer to do the tasks and tests through e-learning tools” and e-learning supports the learners to self regulate and to organize their time “E-learning helps me with time management and self discipline” were placed fourteenth and fifteenth with respective means of 4.05 and 4.00 (agree).

With obvious differences and considerably lower came the item relating to the differences in learners’ results compared with traditional learning: “My results in e-learning were better when compared to those I received in traditional learning” Responses placed this last, at sixteenth with a mean of 3.81 (agree).

The results showed a very positive response to e-learning. Learners rated their experience very highly in terms of the amount and quality of the work they had undertaken through e-learning. They reported that motivation resulted from the ease of learning and were only slightly more reserved in their enthusiasm when comparing their results with those of traditional learning.

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### 4.5.2 The extent of learners' perception of their interaction with instructors

The learners responded to a number of items that were designed to discover the extent of their perceptions of interaction with their instructors. This dimension (Learner-instructor-interaction in e-learning) was the one in which the learners' responses expressed a slightly lower level in the general mean at 3.80 (agree). Indeed, all the items in this dimension came within the response band "agree", the highest mean score being 3.94 and the lowest being 3.66. Their responses are tabulated below (Table 4.20) and a detailed comparison of their ratings follows.

Table 4.20: Dimension 3: Learner- instructor interaction in e-learning

Order	Items	Frequency	S.A	A	N	D	S.D	Mean	Std. Deviation	Items No.	
			(5)	(4)	(3)	(2)	(1)				
		%									
1	I enjoy contacting my instructor via e-learning.	F	78	56	49	11	6	3.94	1.062	30	
		%	39.0	28.0	24.5	5.5	3.0				
2	I built a productive relationship with the instructor via e-learning.	F	71	62	45	16	6	3.88	1.078	27	
		%	35.5	31.0	22.5	8.0	3.0				
3	E-learning encourages me to discuss with my instructor.	F	66	66	47	16	5	3.86	1.047	29	
		%	33.0	33.0	23.5	8.0	2.5				
4	I prefer to communicate with the instructor by e-learning compared to face-to-face.	F	72	53	44	21	10	3.78	1.187	25	
		%	36.0	26.5	22.0	10.5	5.0				
5	E-learning increases communication with the instructor.	F	62	63	46	22	7	3.75	1.114	26	
		%	31.0	31.5	23.0	11.0	3.5				
6	E-learning eases discussion with my instructor.	F	58	57	57	20	8	3.68	1.114	28	
		%	29.0	28.5	28.5	10.0	4.0				
7	In e-learning I receive more attention from my instructor	F	55	55	65	16	9	3.66	1.101	31	
		%	27.5	27.5	32.5	8.0	4.5				

In this dimension, the item in the first place, at mean 3.94 (agree), was about enjoying getting in touch with the instructor electronically, "I enjoy contacting my instructor via e-learning". This was followed by building a useful relationship with the instructor, "I built a productive relationship with the instructor via e-learning" and by giving confidence to the

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learner in discussions with the instructor, “E-learning encourages me to discuss with my instructor”. These items were in the second and third places at means 3.88 and 3.86, (both agree).

Closely afterwards, in the fourth and fifth place, were items about respondents’ preference for communication, “ I prefer to communicate with the instructor by e- learning compared to face to face” and about increasing communication with the instructor, “E-learning increases communication with the instructor”. The means for these items respectively were 3.78 and 3.75 (both agree).

The items regarding facilitating discussion with instructors, “E-learning eases discussion with my instructor,” and increasing the instructors’ attention for individual learners, “In e-learning I receive more attention from my instructor” held sixth and seventh places with slight differences of mean: 3.68 (agree) and 3.66 (agree).

These responses showed that the learners perceived the extent to which e-learning increased their motivation to contact their instructors. They expressed a preference for interaction by electronic means and agreed that opportunities were easier and more frequent. These results showed a positive response to the facilities for learner instructor interaction provided by e-learning.

### **4.5.3 The extent of learners’ perceptions of their interactions with other learners**

The learners responded to a number of items that were designed to discover the extent of their perceptions of interaction with other learners This dimension (learner-learner-interaction in e-learning) was the one in which the learners’ responses expressed a level that fell between that of the two preceding sections. At the general mean 3.92 (agree), the

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results revealed a higher level of agreement than did those concerning learner instructor interaction. Their responses are tabulated below (Table 4.21) and a detailed comparison of the differences between their ratings of different items follows.

Table 4.21: Dimension 4: Learner- learner-interaction in e-learning

Order	Items	Frequency %	S.A	A	N	D	S.D	Mean	Std. Deviation	Items No.
			(5)	(4)	(3)	(2)	(1)			
1	E-learning increases cooperation among learners.	F	76	74	35	12	3	4.04	.966	38
		%	38.0	37.0	17.5	6.0	1.5			
2	I prefer to communicate with my classmates by e-learning compared to face-to-face.	F	92	50	31	20	7	4.00	1.156	32
		%	46.0	25.0	15.5	10.0	3.5			
3	I enjoy contacting my classmates via e-learning.	F	75	65	45	10	5	3.98	1.015	37
		%	37.5	32.5	22.5	5.0	2.5			
4	I built a productive relationship with other learners via e-learning.	F	77	62	40	17	4	3.95	1.053	34
		%	38.5	31.0	20.0	8.5	2.0			
5	E-learning encourages me to participate in discussion with my classmates.	F	66	66	43	21	4	3.84	1.061	36
		%	33.0	33.0	21.5	10.5	2.0			
6	E-learning eases discussion with my classmates.	F	69	56	50	21	4	3.82	1.082	35
		%	34.5	28.0	25.0	10.5	2.0			
7	E-learning has increased my communication with other learners.	F	70	60	38	27	5	3.81	1.130	33
		%	35.0	30.0	19.0	13.5	2.5			

This dimension (learner-learner interaction in e-learning) came at third position in terms of the dimension's means category. It was rated at a general mean of 3.92 (agree), higher than learner-instructor interaction in e-learning.

The item about escalating collaboration between learners: "E-learning increases cooperation among learners" had the highest mean, 4.04 (agree). In the second position, by a slight difference, was the item regarding learners' choice of contact,

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“I prefer to communicate with my classmates by e-learning compared to face-to-face.”, at mean 4.00 (agree).

In the third and fourth place were items about enjoying getting in touch with colleagues, “I enjoy contacting my classmates via e-learning” and building a useful relationship, “I built a productive relationship with other learners via e-learning.” These items were at mean 3.98 (agree) and 3.95 (agree) respectively.

A group of items were closely ranked fifth, sixth and seventh. They concerned encouraging, facilitating and increasing communication among the learners, “E-learning encourages me to participate in discussion with my classmates”, “E-learning eases discussion with my classmates” and “E-learning has increased my communication with other learners”. These items were rated at means 3.84 (agree), 3.82 (agree) and 3.81 (agree), respectively.

Learners’ perceptions of the extent of e-learning’s effectiveness, as shown by their communication with each other, were very positive. They appreciated the speed and frequency of contact. They reported their satisfaction with the quality of learner-learner relationships and with their outcomes. Before moving to present responses to the third question to identify the learners’ perceptions of the positives and negatives of e-learning, it is worth summarizing the mean ratings of the first four dimensions. Up to this point there were no negatives in this survey of learners’ perceptions of e-learning so the table that follows will provide a rank order of the learners’ positive perceptions of e-learning.

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### Dimensions of this research as reported in answers to questions 1 and 2.

The learners' positive perceptions of e-learning were rated at the highest level on the scale adopted for this research (strongly agree) and at the next level (agree). There were no neutral or negative responses. However a scale of satisfaction was evident from the numerical scores calculated for each level. Table 4.22, below, tabulated these variations within the "agree" category against the numerical score of the "strongly agree" category which was recorded for the learners' perceptions of the extent of their interaction with the content of e-learning.

Table 4.22: The first four dimensions ordered by means

Order	Dimension	Mean	Dim	NO
1	Learner- content-interaction in e-learning	4.24 strongly agree	2	
2	The ability to learn autonomously through e-learning	4.12 agree	1	
3	Learner-learner-interaction in e-learning	3.92 agree	3	
4	Learner-instructor-interaction in e-learning	3.80 agree	4	
T	All dimensions	4.00 agree		

Table 4.22 shows that the dimension of the learners' interaction with what is presented to them electronically in e-learning (Learner- content interaction in e-learning) was the highest of the four dimensions, receiving a range of strongly agree scores at the average mean of 4.24. With few differences and directly behind it fell the dimension about ability of learners to rely on themselves in e-learning, "the ability to learn autonomously through e-learning" at mean 4.12 (agree).

The dimension concerning the learners interacting electronically with each other (Learner-learner interaction in e-learning) came at third position with mean 3.92 (agree). Although this showed a slight numerical margin it remained in the same category (agree).

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The same can be said for the dimension concerning learners interacting electronically with the instructor even though it has come at the lowest mean for 3.80 “agree” it remains in the same level (agree) and the total general mean for all dimensions was 4.00 (agree).

Further analyses were run to find out if there were any differences between the two universities in regard the order of the dimensions. The results are presented below.

### Comparison of the dimensions between the two universities

The comparison offered here considers the dimensions only because it is difficult to compare other aspects of the two universities without presenting details which would identify them, thus making disadvantageous consequences possible for participants at the institutional or personal levels. Table 4.23 below presents the differences in the dimensions.

Table 4.23: Comparison between the dimensions’ in the two universities

order	Dimensions	Univ A	Univ B
1	Learner-content-interaction in e-learning	4.25 strongly agree	4.22 strongly agree
2	The ability to learn autonomously through e-learning	4.18 agree	4.05 agree
3	Learner-learner-interaction in e-learning	3.63 agree	3.94 agree
4	Learner-instructor-interaction in e-learning	3.85 agree	3.98 agree
T	All dimensions	3.97 agree	4.04 agree

Table (4.23) shows that there is no differences between the order of the dimensions and in the final results both of them were rated, University A at 3.97 and University B at 4.04 and that overall the pattern of responses between the two universities was similar.

### 4.6 Written open-ended comments added to questionnaires by respondents

The questionnaire was concluded by an open-ended question asking the learners what issues they would like to add that were not enclosed in the questionnaire. In fact, thirty five (35) questionnaires out of the completed two hundred (200) were returned with comments.

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The learners' comments were diverse and various so they are coded and summarized here, loosely grouped according to which focus of the study they addressed and an additional group of comments raised topical issues selected by the respondents.

### **4.6.1 Open-ended comments in relation to the ability to learn autonomously through e-learning**

Some learners identified particular problems such as following references and links when sites broke down. One learner complained, "It is hard to find the references and e-references in the library and e-library, they should make sure about their availability before the referral." Other learners showed anxiety about their development and progress in e-learning. One wrote: "I think the program, in its current situation requires more effort to step forward". He gave, as an example of "an unjustifiable regulation": "When a student suspended his studies for a term, the program cancelled his password. Thus he didn't have access any more, and I am wondering why they prevented him from keeping in touch and preparing himself for the next term." Another agreed that "No doubt there are deficiencies in the application." A third learner saw these disorders as avoidable, "I hoped that they could apply the programme professionally and make full use of its features instead of misapplying some of them".

On the other hand some suggested training for some students who had deficiencies in dealing with the program: "I noted that there were some students who still didn't know how to deal with the program correctly and this will impact on their score. Why didn't they train them?" Another endorsed this idea: "I suggest making a training course about computers and the internet especially for those who lack experience of using it." A course for all students was also advocated in the comments "a course about the computer should be added as a requirement for all students in their first year" and "my advice is to make

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training courses about the internet and its use in communication with others.” Another idea was to establish bulletins explaining how to deal with ICT, “I call on the university to issue a bulletin about dealing with the program.”

Some students suggested some proposals for the application of e-learning, such as a gradual introduction and using mobile phones as communication assistance tools: One student clearly stated “I suggest that the University should make gradual steps in the application of e-learning by a transition from traditional to mixed learning then after a while to the total online program.” Another also wrote, “I wish that the university would use mobile phone messages as reminders and organise the exchange of students’ numbers.”

Learners often expressed the idea that the university staff should work as flexibly as the e-learning students themselves did. This was expressed in such statements as, “since the e-learning is available around the clock the maintenance should be available the same way.” Other learners appreciated their freedom from timetables, for example, one wrote: “E-learning has pros and cons and the positives overcome the negatives for example: availability at any time, so there is no commitment to a fixed time which saves effort as it is not necessary to go to university for ease of access and connection with the instructor .” However others noted that their time was consumed by technical problems, lack of updating and their difficulties in gaining access to programs via log-in procedures and the complexity of dealing with the large number of icons. These problems were expressed in such phrases as “difficulty in connecting to the program’s website and the delay in technical support” and “non-updated”, “complexity” and “difficulty of access to the site and its many icons.” This complexity was mentioned, more than once, as it was thought to make it “worse to deal with the program.” Another learner did not think that time

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management was a technological matter, “I don’t think that the e-learning helps in time organization, it’s a personal issue.”

The quality of reproduction on the website was also a technical limitation, references being made to “the poor lecturer’s voice.” Repeated internet signal disconnections and congested land lines were highlighted in such commentaries as: “I waste time to upload lectures and the technical support lines are few and often busy. I call until I get bored.” However, one response suggested a special effort to overcome problems with the technical support team by noting, “There is poor communication between students and the technical support team and I think the reason is they are novices and the support they get from the university is not enough. Nevertheless, some learners have set up a forum to cooperate “as an e-learning group, we have set up our own forum.” Some of them complained about both design and technology as this quotation shows: “Some programs’ icons and the sites were complicated to deal with, sometimes very slow.”

These comments related to the learners’ preparation to undertake the e-learning course and the universities’ preparation to maintain the course both in respect of ensuring the availability of reference material and in the provision of adequately accessible technical support.. These matters were raised again in the live discussion and will be fully reported in a later section (4.8.1).

### **4.6.2 Open ended comments in relation to: learner- content interaction in e-learning**

Some learners’ praise was unqualified: “I cannot add more than that e-learning is a facilitator and supporter of learning”, “The best thing about e-learning is that e-learning taught me how to rely on myself”, “This kind of learning makes me use my energy to learn

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more and more”, and “The greatest gift I received is a second chance and is great for those who could not come to the University for personal reasons. So I hope all colleges develop and open up their courses for e-learning.” One comment took in both future advantages and present difficulties by simply stating, “I hope that e-learning will be more effective.” One of them praised e-learning especially as a high-quality assessment tool, and wrote that he wished to continue his post-graduate studies the same way: “The e-learning test method was excellent and helped me to obtain better scores and reduce the exam’s terrors, and I would like to study masters the same way” On the other hand a number of them wrote that e-learning may succeed in some subjects and be unsuccessful in others and that its success may depend on the student himself. One wrote, “e-learning is excellent in arts not in science.” Another qualification was “I believe e-learning’s success depends on the situation of the student himself and his acceptance of such a system in education.”

The above comments show that although some learners perceive their success as an effect of e-learning, others perceive some limitations and are aware of their individual commitment to learning as an important factor.

### **4.6.3 Open-ended comments in relation to: learner-instructor and learner-learner interaction in e-learning**

Although some learners found that e-learning met their needs well, for others problems with ICT were compounded by delays and difficulties in contacting both staff and colleagues. Learners referred to such problems as, “lack of opportunity to communicate with colleagues” and “difficulty in obtaining responses from instructors.” They felt that, whilst they hoped some professors would respond to their inquiries, “They should take into consideration the quality, not quantity of the interaction.” Meanwhile some claimed a slow response from the instructors and insisted that a clear staff schedule of online hours for

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communication with learners might be the best way to reduce the deficiency of response from some instructors.

Nevertheless most of the learners wrote about e-learning's advantages and the opportunities that it created: "I observe that in e-learning you are free to choose a learning buddy, unlike in the traditional classes where you have to deal with everyone."

Learners perceived that the extent of communication offered by the interactive capacity of e-learning was subject to the availability of personnel even at distances made possible by ICT and, furthermore, that communication was easier when a carefully selected "buddy" was involved. These comments repeat the theme of personal commitment that was introduced in the previous group of comments.

### **4.6.4 Open ended comments in relation to other topical considerations for e-learning**

Some wrote about other topical considerations, for example: "Technology is the language of these times and must be taken into account. It is not a luxury neither is it recreational but it has become a necessity." Another learner noted the drawbacks of e-learning, "We shouldn't forget its effect on health and physical fitness" and warned that, "in addition, there are talents which will disappear because of isolation." Another learner stressed the appropriateness of e-learning in the modern world "I am sure that the paper period is gone so e-learning can be more efficient and productive by taking advantage of international experience and subsequently improving to reduce its disadvantages." However, this ability to accept change was not shared by all the learners. One wrote, "Note that for over two years I have used e-learning in some subjects but I still prefer books and reading from paper rather than electronic books and, if I have to read electronically I prefer to print it,

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then read it.” Another endorsed this preference by writing “the best means of learning is from traditional books.”

The element of personal choice was underlined in these comments so, although they were offered by just a few respondents, they added to the theme of individual commitment shown above.

Having reviewed the learners’ written comments in certain categories, a summary of their responses is offered below.

### **4.6.5 Summary of written open-ended responses**

Whilst learners appreciated the opportunity to learn at their own pace and in their own place, they were very aware of the technological hitches that limited this freedom. They recognised ways in which the usability of programs and sites could be improved. They suggested some adaptations to university life that may enhance their experience of e-learning such as twenty-four hour technical support, a schedule for instructors’ availability out of class time and the provision of ICT training courses. They placed the e-learning revolution in environmental, health and global development perspectives and were positive about the implications of e-learning for their own futures. The point that arose across most of the topics selected by learners for open-ended comment was the importance of individual commitment to e-learning.

Above a survey of the respondents’ open-ended comments has been presented in detail. Below the space allowed for the foregoing open-ended responses, each copy of the questionnaire had a slip attached on which the respondent could agree to be a member of the live discussion. From the total number of volunteers who returned this slip, twenty one respondents came to the designated venue for the event. The main objective of the video-

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taped discussion was to pose sub-questions three and four about the positives and negatives of e-learning, its requirements and the barriers it faces and the learners' suggestions for e-learning. The groups' responses to these questions will be reported below,

### **4.7 The third question**

The third question asked about the learners' perceptions of the positives and negatives, of e-learning.

This sub-question was introduced to focus group members who had signed response slips attached to the questionnaires to agree to participate in a live discussion. Twenty one learners met at this discussion with a mediator. There were two discussion points in the sub-question, "What were the positives and negatives of e-learning according to learners' perceptions?" The mediator defined each discussion point separately, inviting the learners' comments on the first before progressing to the next. Each discussion point produced both agreements and differences. Members of the group expressed many and various opinions and points of view concerning each point. The following sub-sections report the learners' responses to each question, in the order that they occurred except where the circularity of the discussion led back to previous issues raised.

#### **4.7.1 Positives aspects of e-learning**

The mediator began by talking about the definitions of the term "positive". The positives were the learners' perceptions of their achievements made through e-learning or by association with it. This discussion point set the trend for the further considerations of the discussion by producing both agreements and differences. Their responses will be reported as they occurred except where the circularity would lead to repetition.

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### **4.7.1.1 Appreciation of e-learning**

Almost the entire group praised the experience of e-learning both in its present state, as it is now and with regard to what it will provide in the future. The highest accolades described it as “imaginary” or “a dream turned to reality.” Below are examples of their most typical statements and comments:

E-learning is huge jump so thanks to the Ministry of Higher Education and universities. Can you believe that some instructors respond to student queries at the same moment? It is incredible and I wish for the best, because I hear from other students in other places that there are many features of e-learning that my university has not yet used

In some cases e-learning was praised: “its positives are difficult to recount” and another said “E-learning for me was the dream. I consider studying from home a wonderful and economic idea.” Many speakers said they particularly valued e-learning as it taught them how to learn, for example: “the most positive aspect of e-learning was...it gave me the tools to learn life-long. Proverbially, it didn’t give me the fish, but taught me to fish, in addition e-learning promoted a broader concept of continuous learning, and encouraged self-learning.”

### **4.7.1.2 Independence through e-learning**

The effect of e-learning to promote independent study was noted. One said that, e-learning “familiarized” him with “self-reliance in research and in surveying relevant literature.” The group listed an enormous number of positive characteristics of e-learning, such as that it was “interesting” “fun”, “simple”, “economical”, “effective”, “available”, “quick”, “rich”, “diverse” and “creative”, also that e-learning helped to satisfy their wishes and meet their needs. Many agreed that it was based on their needs and interests. One said, “Learning through e-learning is based on what I need and what I want and it was not imposed. So, by making learning interesting and fun, it achieved the highest efficiency with the least effort and in the least time, thus raising the quality of education and achieving its objectives

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effectively.” Another said, “In traditional education we learned by memorizing things now e-learning has helped me to think analytically and logically.”

### **4.7.1.3. Ease of e-learning**

One of the positives of e-learning was identified as its tendency to “simplify the presentation of information”, which facilitated both absorption and understanding and enabled the learners to make links to other items of information. In the same context learners appreciated the accessibility of information “under your fingertips.” In addition, learners praised the availability of information “at any time, in different versions such as documents, presentations, and videos as a response to questions placed in any search engine with the possibility of getting thousands of responses.” Another speaker phrased similar ideas differently, “in E-learning I get diverse and multiple sources of knowledge. I can get the information from a variety of sources, libraries, articles, news, news groups, universities, research centres, books, magazines, newspapers and television programs, all in one basket under one roof.” Yet another way of stating this was:

For me, e-learning provided a rich learning environment with diverse sources of learning, which were adequate to meet the capacities and needs of different learners, in addition, e-learning contributed to the reformulation of roles in the process of teaching and learning in line with contemporary educational developments, and it provided all this accurately and expeditiously. E-learning was fun and interesting and, additionally, promoted communication between the components of the system of education, as well as between the university and the surrounding environment

### **4.7.1.4 Impact of e-learning**

The impact of e-learning on educational methods was widely acknowledged. One speaker said that, “E-learning shaped education, by presenting learning in a familiar form, thus, providing lessons in a model that would be of help in the replication of good practices. All these practices were assisted by big databases and question banks.” Another speaker noted the “constant excitement and activity in follow-up work” facilitated “learning for a long

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time without exhaustion, especially in some websites which were well-designed.” Due to the effect of e-learning on the speed and accuracy of the learners, one felt that encouragement and self-reliance “will create a more skilled generation of learners who are responsible for their learning.”

The foregoing section conveyed some of the excitement expressed by learners about e-learning. Comments also showed their awareness of its potential and these are reported in the following section.

### **4.7.1.5. Wider issues**

There was close agreement between group members about wider issues such as e-learning’s positive role in national and international interaction and communication and in the creation of dialogue, exchange and co-operation between cultures. Learners showed their sensitivity to these issues in statements such as:

I can think of many positive points about e-learning which are important in this era, such as that e-learning works to maintain openness in communication and interdependence with others, not just in the university or the city but all over the world. E-learning promotes global cooperation through joint research and dialogue, using the tools of e-learning and the internet, such as video conferencing and many multi-media programs that enable interaction at the same moment, notably during medical operations.

Another speaker acknowledged that:

E-learning eases and speeds the transmission of educational experience by providing high-quality channels of communication, enabling interested people to discuss and exchange their views and experiences. E-learning does this by gathering them into one virtual room, across distances. E-learning thus contributes to preparing a generation capable of dealing with technological innovations. The skills of the era, especially adapted to the massive developments taking place in the world these days, can be made available to the whole of society, which will eventually unite us in a digital society in line with global happenings in today’s world

This holistic view was detailed by another speaker, who said, “E-learning allows interviews and discussions directly and simultaneously over the internet, and provides the latest

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knowledge in line with the needs of learners, in addition e-learning provides simulation, animation and interactive exercises and practical applications.” The effects of this capacity were described as

Beyond all geographical and spatial barriers to spread the ideas, between people, exchange knowledge, and reduce barriers that were known in the past. This includes the economic ones such as the cost of shipping of printed materials, the political ones, such as embargoes on some ideas and cultures. Today a massive amount of information crosses borders in the form of electronic signals. Nothing can prevent them.

This was endorsed by another speaker, who said, “The main positive, from my view is the quick access to information and the way we can obtain the views of scientists, intellectuals and scholars around the world in various fields.” Another endorsement was: “I think e-learning achieves equality by getting knowledge, speedily across the network, making the information available at the time of publication to all countries of the world and producing equality of information between all human beings.” Inequalities of funds and mobility were also noted by one member of the group, who said, “The financial cost of e-learning is less, for example in the video conference you will save the costs of the invitation letter, ticket, housing, transportation so it raises the return on investment by reducing the cost of education.”

The foregoing ideas about social and economic benefits of e-learning were matched by comments on its psychological impact and these are reported in the following section.

### **4.7.1.6 Psychology and e-learning**

Aspects of the psychological impact of e-learning attracted the attention of some of the participants, where they noted increased learners’ participation particularly if they were shy to participate face to face. One said, “Some colleagues who rarely talked or, debated for fear of mockery is now more involved”. Another said, “I believe this type of education would be very useful for students who are shy and anxious about discussions. E-learning gives students greater boldness in expressing their ideas and searching for facts.” A lot of

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them illustrated how e-learning broke down psychological barriers between the instructors and the learners and how, by taking into account individual differences, some more withdrawn learners achieved equal access to information. One member of the group stated, “In my opinion e-learning breaks the psychological barriers between the instructor and the learner and satisfies the needs and characteristics of the learner.” Another speaker said, “It offers a way to consider individual differences between learners and it enables them to complete the learning processes in environments suitable for them and to progress at their own pace.” All participants agreed that e-learning taught each to save time, money and effort and allowed each one to learn, regardless of age. One phrased this by saying, “Life is time, and time is life and e-learning works effectively in the provision of learning where there are no requirements to engage concurrently as to the time or place or learner’s age.”

Respondents expressed not only their appreciation of personalized learning, as shown above, but also the importance of up-dating their skills as summarized below.

### **4.7.1.7 Novelty of e-learning**

Some of them said that the students in e-learning are producing everything that is new and are building on previous knowledge, without repetition. One explained that

In the digital age and the rapid spread of information, the students focus on the production of new and non-repetitive ideas because it has become easy to recognize intellectual products over the world. Also, e-learning and internet create a dynamic vital system to transfer world events directly and make education global.

Another said, “The most positive aspect of e-learning is flexibility in time and place. Thus e-learning gives access to information to a greater number of educated and interested people around the world which enables them to form broad, global relationships.” They talked about the speed of information searches and ease of adding and crossing out, modifying and developing the results of e-learning as a positive: “I can say that e-learning

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implies speed, compared to traditional methods. The time needed for research on a particular topic by using e-learning is nothing.” Another endorsed this by saying, “E-learning is distinguished by ease of updating and, amending electronic versions without the need for re-printing and paper distribution.”

All the members of the group were of the same opinion that e-learning gave them sufficient technical skill to deal with technology. One said, “In fact, through e-learning the students were able to master the skills of dealing with technology as well as learning their subject. To learn to deal with all the technology is one of the requirements and is an essential element in building modern societies for the coming age.”

The foregoing recognition of rapid ICT developments led to their comments on the knowledge explosion which is recorded below.

### **4.7.1.8 The knowledge explosion and e-learning**

Some of them summarized the positives of e-learning as its contribution to the solutions of the many problems of traditional education. One speaker explained,

From my point of view e-learning contributes to the solution of many problems of education, such as the knowledge explosion, the unequal flow of information and the demand by learners of all ages. E-learning works to expand opportunities for admission to education and is able to train and educate workers and housewives without asking them to leave their jobs, or homes, thereby contributing to raising the literacy rate.

Another speaker pointed out that “e-learning is suited to different methods of education by using its various features such as voice, text, photographs, videos, presentations and others. Accordingly in e-learning, learners can use various senses, also the possibility of watching the media enables e-learning to meet all learners’ individual styles.”

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### **4.7.1.9 Communication and e-learning**

Several members of the group believed that e-learning increased the speed of communicative interaction between the learners themselves and between learners and the university and between the learners and instructors. One said,

E-learning increased the possibility of contact between learners and the university and instructors by offering ease of communication between these parties in several ways. These included discussion boards, e-mail, and chat rooms, and this was an incentive for students to participate and interact within the topics at hand

Another endorsed this by saying it was “very easy to get access to the instructor in a quick time.”

### **4.7.1.10 Assessment through e-learning**

Speakers appreciated e-learning’s diverse means of measuring students’ attainment. One member of the group put it this way,

I think that accessibility to multiple methods of evaluation in e-learning is very positive. In e-learning a variety of different and more accurate tests are used for a fair assessment of learners’ performance. Furthermore the utilization of e-learning tools to deliver information and assignments backwards and forwards between the instructor and the learner is both quick and professional.

One speaker concluded that this feature of e-learning, “has changed the face of everything in our lives, including the ways we learn... in the former days we went to the university, now the university comes to us and the whole world has become a field of learning like a classroom but with out walls.”

The foregoing comments showed that the learners perceived e-learning as part of the solution to information retrieval at a time of the multiplication of knowledge. The following section will draw together the comments on all the topics recorded above.

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### **4.7.1.11 Summary of learners' perceptions of the positive aspects of e-learning**

To summarise this part of the live discussion, the group spoke of e-learning in the highest terms of praise. They appreciated it in its present state and for its future potential. They praised e-learning's simplicity whilst offering multiple resources for learning in appropriate learning styles. Members of the group commented on the fun, speed and accuracy of e-learning. Its holistic quality was found applicable to political and financial and global considerations. The psychological effects of such a flexible and far reaching method of learning were applauded by members of the focus group and e-learning's capacity to offer flexible assessment options was acknowledged.

The group's comments about the positives of e-learning were fully expressed and their attention turned to its negatives as reported below.

### **4.7.2 Negative aspects of e-learning**

The mediator began by talking about the definitions of the term "negative" which were the problems that the learners saw happening with e-learning or those that they thought occurred because of e-learning which could be considered harmful side effects.

Members of the group expressed many and various opinions and points of view concerning the negative aspects of e learning. There was both agreement and disagreement. Their views are reported as they were received beginning with loss of face to face communication.

#### **4.7.2.1 The silent generation**

The participants started with a warning against drifting towards e-learning, without taking into account its many negative aspects such as forming a "silent generation" who cannot enter into dialogue with one another, and the lack of sympathetic and humanitarian values that may arise. Such comments were made as, "The praise I hear for e-learning is fine, but

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this should not take us far from its negatives” and “it is true that e-learning provides many benefits, but this type of learning creates a silent generation who are not comfortable in the art of dialogue or debate, unable to share with other people’s happiness and sadness because of the affect of computers and internet.”

The argument occurred on this point, when one of them said, “This problem may also co-exist with traditional education and it should not prevent the implementation of e-learning.” Another speaker disagreed saying that “gradual application” would enable creative educational thinkers to, “accept the risks and minimize them as much as possible.”

A number of them felt that e-learning weakened the relationship with the university and the instructor’s capacity as a role-model in the life of the learner, for example, “I feel that e-learning weakens my relationship with the university as well as with the instructor and weakens his role model and its direct impact on me.”

Not only did the respondents worry about losing human contact through e-learning, as shown above but they also doubted their learning materials as reported in the following section.

### **4.7.2.2 The reliability of information**

There was discontentment among the group about the reliability of the information from instructors and conflicting sources: “We should be able to depend on the explanations given by the instructors or supplied through links on the web but sometimes we find a conflict between the lectures and references, which leaves us at a loss” A number of them expressed doubts about the lack of credibility and validity of information, for example: “I noticed , in the websites that we referred to, there was misleading, erroneous and dishonest

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information published whether intentionally or unintentionally.” Some members of the group feared that e-learning might predispose the learners to literary fraud because it is easy one of them said there were “easy ways to do that and a difficulty of detection.

Whilst the learners’ academic fears are noted above, their personal insecurities are reported in the following sections.

### **4.7.2.3 Physical effects of e-learning**

Participants in the focus group unanimously agreed about one very negative aspect, which the members of the group saw as undiscovered side effects caused by or associated with, the use of e-learning and technology in general. These could be physical, physiological or social:

One speaker explained, “From my point of view the novelty of these techniques and its intensive use has a damaging effect on physical well-being including poor seating posture, eye strain, repetitive use of the hand muscles, curvature of the backbone and exposure to radiation.” Whilst effects on the mind included the habit of computerized calculations instead of using the brain, learners also commented on psycho-social effects, such as the diminished importance of reading, and difficulties with emotional development. “Dealing with e-learning continuously may lead to isolation among learners who find it difficult to do sports and social activities and this will have a long term effect on the personality.” Another speaker contrasted e-learning and information with “real social experience.” “The absence of the human side in this kind of learning” was noted with regret. Another speaker feared that e-learning could “cause addiction to dealing with information technologies and networks, especially the internet, which will affect the relations of family and work.”

Many of them said the learners did not to use all their senses in e-learning and they found

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this unacceptable. As one said, “I noted that e-learners focused on some of the senses, hearing and vision, whilst smell and taste were being ignored.” More than two-thirds of the group mentioned the inability of e-learning to discover talented students, let alone expand their talent. They expressed the weakness of verbal communication in e-learning and the absence of real interaction. They said that electronic interaction cannot compensate for real experience. Some such comments were, “Some students have talents and abilities which e-learning will not be able to identify, because e-learning has a specific framework”, its weakness “in the development of verbal ability... weakens the language of communication. Indeed most interaction in e-learning is done by pressing buttons without voices and facial expression.” Another learner said:

I think this type of education does not create real interaction between students from different regions in the same way that their presence in the classroom would. Real interaction, moving from one region to another and travelling from one’s own country to achieve the benefits of another would enable us to learn the lifestyle and traditions and allow us to interact with various communities of learners. Then we would inevitably learn the systems and different laws of those countries, in a way that cannot be achieved through e-learning

Another opinion was that e-learning would distract, “the student from the important life skills they need such as listening, writing and interaction with peers and taking part in talk, dialogue and discussion. It also moves people away from actual life practices.”

This was a brief report on the negative effects of e-learning on learners' personal lives. They then progressed to some comments about hazards on the internet that are reported below.

### **4.7.2.4 Inappropriate material on the web**

Almost half of them reported that because of the open environment, through which

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e-learning may be accessed, exposure to the bad sites or pornographic messages can occur.

The effect on behaviour and ethics of such information was unwelcome to the members of the group. This was expressed in such terms as:

E-learning and its networks are like an ocean that has benefits and risks. One of the biggest disadvantages of e-learning is getting accidental access to the bad websites because creating a website is not limited to particularly educated people. In addition it is an open system providing good and bad advertising.

The frustration reported above was accompanied by complaints of boredom reported below.

### **4.7.2.5 Disenchantment**

Some of them expressed the feeling of boredom caused by dealing with much technical material continuously, for example, “Dealing with the large amount of technology makes me bored of many types of hardware and software used in the educational process.”

One of them noted that the disadvantage of e-learning was that it provided the same content for different learners, by saying, “I think that most of my colleagues did not mention the issue I see it as negative, where e-learning presents the same content, without taking account of each learner’s own learning style.”

Along with the inadequacies of design, mentioned above, some learners suggested, as reported below, that the cost was too great.

### **4.7.2.6 Wasting time and money**

Some of them stated such negatives as wasting time on non-useful activities and the need for money to follow-up all that was new in technology. These comments were phrased as follows: “Sometimes a learner may waste his time surfing new programs and sites including non-educational websites such as Messenger and chat and Web 2.0” and they

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referred to, “Rapid changes caused by the emergence of technological innovations and the need for the replacement of hardware and rapid switching of software”.

The expenditure of money was a heavy burden on the students as reported above. The following section summarizes all their complaints.

### **4.7.2.7 Summary of the learners’ perceptions of the negative aspects of e-learning**

To summarize the negative points raised by members of the live discussion, a concern for the loss of face to face interaction led to fears about social isolation, loss of physical and emotional stimulation and loss of recognition, both for distanced role models and gifted proteges of the traditional university system. It was felt that sometimes sources of information may be unreliable and fears were expressed about inadvertent exposure to advertisements and information that may be inappropriate to the learners’ moral view. Some learners felt that the novel resources of the web may lead their colleagues astray or that rapid innovations in hardware and software may create unforeseen financial burdens on learners. Most importantly, some members of the group cast doubt on the ability of e-learning to accommodate a full range of learning styles.

The discussion then turned to a consideration of the learners’ perceptions of the requirements of e-learning and the barriers facing it as well as their suggestions for e-learning.

### **4.8 The fourth question**

The sub-question, “What were the learner’s perceptions of the requirements and barriers facing e-learning and what were their suggestions for the improvement of e-learning?” was introduced to the focus group interviews once their perceptions of the positives and

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negatives of e-learning had been discussed. There were three discussion points in sub-question four: “requirements”, “barriers” and “suggestions”, the mediator defined each discussion point separately, inviting the learners’ comments on the first before progressing to the next. Each discussion point produced both agreements and differences. Members of the group expressed many and various opinions and points of view concerning each point. The following sub-sections report the learners’ responses in the order that they occurred except where the circularity of the discussion led back to previous issues raised.

### **4.8.1 Requirements**

The mediator began with an introduction about the meaning of the term “requirements”. The definition used was that requirements were the things which the learners saw as necessary and important for the application and success of e-learning. Following this introduction, the mediator gave them the opportunity to talk, and discuss. Opinions and points of view concerning the “requirements” were many and various. The topics raised by the focus group interviews are reported here in the order in which they actually occurred with some regrouping of comments to avoid circularity.

#### **4.8.1.1 Hardware, software and maintenance**

Members of the group began talking about requirements by focusing on the importance of selecting good hardware and software that will really help them achieve. Compatibility was a major theme:

The most important requirement, in my view, is the selection of appropriate technology by the university. Both hardware and software should support e-learning goals and if the hardware is incompatible, the university should develop the hardware to suit the software and the same thing could be said to us as learners about choosing compatible hardware

Although one of them agreed with the above, he preferred that the university should first build a contemporary and up to date infrastructure then pay attention to the software:

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“building a high-quality infrastructure or updating the existing one should be the priority then comes selecting the applications and software.” In response the mediator raised the issue of funds to update the infrastructure and one of the members of the group agreed about the importance of this subject, saying: “I think that what my colleagues mentioned is vital, but surely all that cannot come about without money, so I believe that providing the necessary funding for e-learning provision is the highest priority”

Whilst some learners felt the equipment was at fault. another agreed, but added a different requirement which was to provide well trained human resources: “There is no doubt that providing the essential material requirements- the infrastructure, equipment, furniture... for the e-learning is very important but for me the provision of competent well trained personnel if not more significant it is equal to the infrastructure.”

A great number of them mentioned that learners should be taught about computers and the way to deal with them from the beginning. Instructors should be trained to teach this subject which should be marked for passes or failures. In fact, the learner strongly expressed the necessity of training for all who dealt with e-learning,

I consider that teaching computer skills in particular those required by e-learning software is an important requirement for learners and I wish that the students could be taught the skills to deal with the computer as a requirement prior to the commencement of e-learning especially for students from Arts backgrounds, I would also like to add that there are some teachers who don't know how to deal with computers. I believe that training them is at least as important as training the students. I repeat training, training and training includes all parties: e-learning teams and administration, learners, lecturers and others, before and during the application, by effective and sufficient preliminary courses and by frequent short and intensive refresher courses, including theoretical and practical input given by experts and specialists in the field.

Some of them suggested making use of the private sector in training, for example, one speaker said: “I think that e-learning has been successful in the private sector, I mean in

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some private colleges and universities. Why is there no private-sector participation in building the foundations of e-learning and training at the university?" A few of them however, emphasized the need to provide the appropriate environment for the application of e-learning and said Saudi should benefit from the experiences of advanced countries,

A suitable environment for the recruitment of e-learning is important. I mean to refashion the infrastructure and the existing educational system, to allow whatever is necessary to accept e-learning. This includes developing the appropriate rules and regulations to ensure that learners benefit from it.

One member of the group added: "This is true, and an important requirement and I can add the university should review and adopt a plan based on the experiences of advanced countries in e-learning to benefit this area of development."

Having voiced the foregoing criticisms, the learners suggested good planning. Some of their comments are reported below.

### **4.8.1.2 Planning**

One of the groups considered that e-learning, like any other project, needs to progress by recognized steps:

Actually e-learning is a project, like any other project, requiring, prior to its application, a specification of what e-learning is and setting its objectives. Its characteristics should be studied and its potential benefits and risks. Its feasibility and the problems that e-learning will help to solve, as well as its limitations and constraints and the procedures for how and when it could be employed should be assessed before implementation and this should be gradual.

Many speakers expressed agreement, especially about studying the feasibility of the introduction of e-learning, at all its stages, to determine whether it would be useful or not and to facilitate its gradual introduction. Some examples of what was said follow: "I agree with my colleague , so I think that studying the feasibility of the e-learning recruitment is urgently required to ensure both educational and economic returns in comparison with traditional methods, or even with other similar innovations" and "the market is full of e-

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learning software and I confirm that planning should be done from the beginning to save time, effort and money and then, if the feasibility proves the value of e-learning, it can spread.” Another agreed, “This is true, from my point of view, I think that the gradual implementation and the involvement of all stakeholders at all levels is a vital requirement.”

One member of the group raised the issue of copyright as a vital requirement to promote trust between learners and the university: “The requirement that I see as urgent is the copyright where e-learning provides an open environment making internet and electronic sources available. Any kind of information under one’s finger, ready to copy and paste will reduce the distinctions of style between students and could damage the reputation of the university and its outputs.”

In summary of the above comments, it is clear that the learners experienced some drawbacks and that they could see ways of addressing these through training and planning.

### **4.8.2 Barriers facing e-learning**

The group of twenty one respondents then began to discuss “barriers to e-learning”. The definition used for the term was the things that members saw as a block or a limitation on the application of e-learning. The significance of the block was that it prevented learners from benefiting from the main objectives of e-learning: learning at any time, in any place, at any pace. Following this introduction, learners had the opportunity to respond freely. Their comments are reported partly as they occurred but with some attempt to group comments on similar topics together whenever the circularity of the discussion reverted to earlier themes.

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### 4.8.2.1 Access to the site and maintenance

Members of the group uniformly expressed frustration with the difficulty of access to the e-learning site and its frequently slow performance, for example, one said that his

biggest obstacles were difficulty of access and almost constantly slow browsing... especially at peak times. I thought that this may have been due to the inefficiency of the networks, or the inadequacies of hardware and software...Indeed, there are many disconnections during browsing and, I believe, forcing the user to go back again and again to the network causes the loss of data. In most cases, it is difficult to enter or return to the same search sites, whilst navigating

Expressions were used such as, “When downloading for long time the computer reached 95%, the line suddenly disconnected! I don’t really know what the reason, whether it was from the University, or from the public network.”

Such issues were closely related to lack of maintenance on which the learners were agreed without exception. This was described as: “the suffering we are experiencing from lack of maintenance.” One member of the group commented, “There are no technicians. We need them 24/7. You know e-learners may need maintenance at any time. So they should be ready when needed upon request at any time of the day or night.” One added “I think that e-learning’s success is based on the effectiveness of other factors and it is related to other technological factors.”

A majority of them talked about the software and networks’ security weaknesses and the risk of viruses, worms and hackers’ penetrations,

Indeed, I have the matter which I consider is the greatest barrier. I sometimes got viruses causing many problems and losing data from my flash memory or my computer, which means that the protection is weak in some parts of the program or the program itself or the network is at risk. For sure, lack of the security will call the amateurs and hackers to attack and penetrate our sites.

Having spoken about the delivery of e-learning, the learners made comments about design and production that are reported below.

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### 4.8.2.2 Design and production

Design and production were not ignored by the members of the group as they mentioned a weakness in this aspect:

I can see the lack of ability to design and produce a good quality of educational content, for example: the size of some material is too big and too long so there is no difference between these and their paper versions. To me this means that they simply transfer paper to electronic form without any additions or adaptations to make it suit the technology and benefit from it. It is often as if you read the book on the screen instead of on paper

There was close to inclusive agreement about the excess of information and issues about how to deal with it and how to choose the right search engines, for example: one speaker identified, “Problems or barriers to me as an e-learning student arise from the large number of research tools and the breadth of information on the internet, therefore, the search for a particular piece of information or a site was very difficult.” Another agreed, “What my colleague mentioned reminds me of the greatest obstacles regarding the management of the knowledge and selecting the kind of information you need and getting it, dealing with it and using it.”

The lack of novelty in content, noted by the learners was the reverse of rapidly evolving technology, which also had drawbacks for them, as noted below.

### 4.8.2.3 Up-dating and retraining

Some of them said there was another barrier caused by frequent changes of software and the need, therefore, for retraining for all in the new formats, there were comments such as, “changing software needs a time for training for both instructors and students” and “some instructors don’t understand how to deal with technology and if they know they don’t know how to choose between available means” One said, “There were a great numbers of instructors and administrators who were not capable due to “technological illiteracy” adding that, “It required a great effort to train and qualify the instructors and students in

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preparation for such experiments.” It was felt that there had been a “lack of instructor pre-service training in the necessary skills to use computers and the internet.” Nevertheless, some members of the group disagreed that technological illiteracy and lack of skill were big barriers because, as they said, this problem could be resolved,

The problem of instructor and student mastery of the computer could be resolved by training courses for lecturers, taught in a specialized computer lab in each college. This will end this problem.” Another speaker felt the problem could usually be forestalled at home, “If students were given home work related to computers, I think parents could provide the computers at a very low cost ... and the university can provide computers only to needy students.

Some members of the group noted that some members of the faculty and some administrators showed reluctance and lack of enthusiasm about using e-learning.

They spoke of “rejection and resistance by some to the use of e-learning.” One added “especially the old. They refuse to modernize, and are resistant to the application or the recruitment of the new.” Another explained,

I don’t believe the technical or financial constraints were the main cause of non-use of technology, but the human element played a significant role in that, so I think the university should look into the openness of faculty members towards the use of this technology and its importance in education.

Members of the group expressed the opinion that lack of awareness of the importance of e-learning was a significant barrier. One said,

Don’t forget that sometimes a non qualified and non aware management will be the major obstacle in the way of e-learning and its application. This is shown in the constraints of routine administrative procedures and complex and rigid regulations which do not allow development, or flexibility.

Another member referred to this as “the decision”. Part of the group, believed that changing the instructors’ role in e-learning was, itself, an obstacle, for example: “When varying the instructors’ role in e-learning, a lack of understanding about the new role led to the belief that e-learning eliminated the role of the instructor.” It was also said that there was “lack of understanding of some parents for this type of education.”

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Whilst all the barriers mentioned above seemed local and approachable, the learners commented on wider issues over which they had less influence. These are outlined below.

### 4.8.2.4 Wider issues of community and cost

Some believed that the weakness of knowledge about how to deal with computers extended to the community for example,

I see the rejection shows through the media, such as radio, television, press, and through meetings I believe that there is technological illiteracy and lack of awareness of e-learning in the community so people, institutions and organizations may refuse e-learning as a new idea because it touches and affects the future of their children and family life.

This became a circular argument for the training of university personnel.

However, cost was another issue that had implications for the universities, and learners' families because budget was repeatedly stated as a significant obstacle and this was accepted almost unanimously. One member of the group said, "I accept it as true that the infrastructure needed huge funding in the first phase." Another expanded the idea of initial funding to running costs when he said,

I expect that the administration may have been keen to apply e-learning, but there are some problems arising from the lack of funding, lack of material resources and human resources, and the lack of professionals, experts and specialists required for the application of e-learning, and the unwillingness of the institution to communicate with other institutions to receive support and assistance and technical advice for e-learning.

Another member of the group noted that, "the need of this amount of money to transform the universities to the e-universities and the creation of e-learning requirements is a huge problem." One member acknowledged that

I consider the need of expenditure for the provision of infrastructure at the beginning was the most important barrier. For example, the establishment of this infrastructure needs certain phone lines, and certain computers, the evolution of software and hardware, all of which adds to the financial burdens of universities. There is no doubt that some universities cannot provide this in a few years and then the pursuit of growth will create another problem and so it will go on.

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Some disagreed about the impossibility of finding solutions. One said, “I disagree with you about the cost. This can be overcome by putting projects out to tender with more than one contractor... Like the private schools where they have enormous potential to command the cheapest prices.” Nevertheless, other members of the group suggested that stressing e-learning’s modernity and looking to it as a project for profit was, in fact, an obstacle to its success. One said that, “The emergence of modern e-learning applications may fall into the hands of some businesses that aim to profit from education although they are not qualified for such important tasks.” Another stated that “Some of the programs and some of the courses were offered by businesses who were not scientifically qualified to contribute but whose goal was profit only.”

These disillusionments about the human and financial costs of e-learning were made worse by lingering doubts about the integrity of ICT which are reported in the following section.

### **4.8.2.5 Credibility**

A few members of the group talked about lack of credibility as an obstruction, for example, “Credibility is subject to accuracy and if a student receives information from the Internet and believes mistakenly in its accuracy this will damage scientific research and it happens where there are unknown or suspicious sites.” Other barriers to efficient internet research included insufficient knowledge of the English language which could be a great obstacle because of the lack of Arabic content on the web compared to the abundance of information in English. One speaker said, “Lack of Arabic content sources on the web compared to English is a language barrier to our taking full advantage of the network so credit will go to those who are fluent in English and they are few.

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This concludes the focus group's contributions to the barriers to e-learning and a summary of their comment to be found below.

### **4.8.2.6 Summary of learners' perception of the barriers facing e-learning**

To summarize the responses of the learners in the live group interviews to this discussion point, they were concerned about technological, financial and ideological barriers to e-learning. The systems and sites they used for e-learning were slow, became easily and frequently disconnected and were insufficiently secure, allowing hacking and viruses to hinder their learning. They saw these problems as results of the inability to use, design and produce learning material in new and appropriate ways. Although the need for training courses for instructors and learners was noted, the effects of institutional and societal rejection and resistance to e-learning were additional barriers. Other barriers learners had noticed ranged from budgetary constraints to the lack of credibility of information sourced on the web and lack of Arabic language sites.

Having aired their perceptions about the barriers to e-learning, the members of the group were invited to give their suggestion regarding e-learning. A report of these follows.

### **4.8.3 Learners' suggestions**

To begin this discussion "suggestions" were defined as ideas that the learners saw as useful in the development of e-learning and likely to reduce its disadvantages, maximize its positive aspects and overcome its barriers and achieve its requirements. The group presented various opinions related to this issues, agreeing on some topics and disagreeing about others. The following report presents speakers in the original order of participation except where coherence requires slight reordering.

### 4.8.3.1 Paper support

Many of members of the group proposed that the university should provide a brochure about e-learning and its characteristics. One said there should be “a newsletter or brochure explaining e-learning or a training course. Don’t leave the student to discover it by himself because there are potentials and useful characteristics which we don’t know.”

### 4.8.3.2 Sponsorship

The suggestion was made of developing e-learning with sponsorship for material, technical and human support,

to develop e-learning they should provide necessary material resources, and some technical components including equipment and machinery. I mean they should provide a suitable infrastructure for this type of education. I refer also to the preparation of the human resources as well as providing the required land lines for the communication needed to transfer education from one place to another.

Another learner expanded the idea further by saying, “I suggest the provision of high-quality manpower designers and trainers and the development of the human resources to deal with e-learning.” These suggestions were underlined by the comment, “I think it is essential to offer financial support which will enable the university to select appropriate technical facilities.” The learners repeatedly recommended the private sector as a source of benefits for training and as a means of building on the experiences of advanced countries. One learner said, “I believe it is a good idea to benefit from the private sector by seeking participation in building the foundations of training, especially from companies with good reputations and proven educational track records.” Another added, “I propose universities review and adopt the plans and experiences of countries that are advanced in e-learning so that we can benefit from their experiences in this area.” Another agreed, “I believe it is a good idea to take advantage of similar successes in other countries and in non-educational sectors also.”

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The theme of learning from global experience and supporting its equivalent in Saudi Arabia was shown by the above comments and those reported in the next section showed the learners' commitment to the wider community.

### **4.8.3.3 Wider issues**

A few members of the group suggested raising the awareness of e-learning in the community as a way of training future consumers to receive the educators' contribution themselves and to support both learners and research through the initial difficulties facing e-learning. One said, "Efforts should be made to educate the community and explain to them what e-learning means and raise community awareness and deal with their rejection of it. Another said, "I see the need to develop e-learning. The necessity is for educators to be directly involved in the production of educational programs and the supervision of educational software." Another recommendation was to "Develop training programs for students, instructors and administrators to optimize the use of technology." One learner stipulated that, "Training for all those who deal with e-learning should be through the internet." Financial help was specified, "To assist students who are receiving short courses, for those could not attend the intensive courses." One member of the group felt it was important to "encourage researchers to research into the difficulties faced by learners and present the solutions." One of them said that the development and success of e-learning, should include making sure e-learning was accepted by everyone, especially by decision-makers, "They should make sure that e-learning is accepted by all, especially senior management, and decision makers."

Whilst access to e-learning may multiply, the learners suggested areas of responsibility that should be considered. These are reported below.

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### **4.8.3.4 Responsibilities**

Many of them proposed a permanent, qualified maintenance team, and strong firewalls to protect e-learning. One such statement was, “I suggest a qualified technical support team in sufficient numbers with around-the-clock availability for the success of e-learning as well as a very powerful protection for e-learning networks.” Whilst the requirements of education should be protected in this way, the focus group participants doubted that the business ethos was advisable as one proposal for the development of e-learning was to distance it from the business model and deal with learners in e-learning as traditional learners, “handling students educated through e-learning, as ordinary traditional learners not as consumers or customers.” However, almost full agreement was expressed over the Arabic content. This, they said, should be more because there is a lack of Arabic sources for e-learning and on the web, as one said, “I suffered severely from the lack of content in Arabic so, to develop e-learning, I suggest increasing the Arabic content on the internet.”

These maintenance, ethical and cultural responsibilities were suggested by the learners whose ideas about health and well-being follow.

### **4.8.3.5 Health and safety of e-learning**

A proposal to create health and safety standards in order to develop e-learning was mentioned by one of them, who said, “I suggest constructing clear scientific criteria for e-learning in terms of both design and the reliability of its certification.” They were unanimous in their proposals that a government body should try to reduce the harmful side effects of e-learning, whether physical or psychological by developing appropriate standards of health also, by compensating aspects of humanity. Comments ranged from, “They should develop a health standard to deal with technological products” to “trying to compensate for the weakness of the human side of communication, by developing schemes

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requiring the learners and instructors to meet face to face at least one or two times per term”

The above comments conclude the report of the learners' suggestions for e-learning. All of their comments are summarized below.

### **4.8.3.6 Summary of learners' suggestions for e-learning**

The members of the focus group interviews made suggestions about e-learning that arose from their perceptions of its positives and negatives, its requirements and barriers. They revisited wider issues, and training, suggesting community education programmes would help raise awareness and that paper resources were added to the introductory packages in universities. They asked for round the clock maintenance and they wished to avoid being treated according to the consumer model of input and output. They wanted e-learning to be more culturally compatible than they had previously found it and they felt that some traditional values and procedures were worth continuing. Most importantly they suggested that budgetary difficulties should be addressed through sponsorship.

## **4.9 The secondary goal of the focus group**

The focus group was a research tool that served many purposes. For a full examination of its usefulness refer to Chapter Three. The qualitative data gathered from the members of the group was used to triangulate and validate the findings of this research and to extend the knowledge it offered of e-learning. The following sub-sections show how the secondary goal was achieved.

### **4.9.1 The ability to learn autonomously through e-learning**

The members of the focus group interview were asked about the capability of learners to learn autonomously through e-learning, “Are you able to learn autonomously through e-learning at any time, anywhere and at any pace?”

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The responses expressed strong approval of e-learning, such as, “Yes, and e-learning is a huge helpful step, especially for those who previously pulled out. The ease of communication, and of the internet, even in the desert accessing the internet through a mobile phone, is great even if we've had some difficulty in the beginning.”

Some of them made their approval conditional on funded provision of e-learning requirements. One said, “If these essentials are complete, we are capable of autonomous learning.” Another stressed, “If requirements such as equipment, the speed of downloads, e-books, and broad band are available, we will be able to learn.”

In the following section some matters for triangulation are reported.

### **4.9.2 Expectations of and needs for e-learning**

The mediator asked about the expectations of and needs for e-learning and before questioning he explained the meaning of his terms: expectations were what you wished to be included in e-learning, whilst the needs were the necessary things or the requirements to learn through e-learning. Some expressed their inability to offer an opinion due to the lack of clear outcomes because the experience was still in its beginning stages. One said, “E-learning is in its early stages, I cannot judge as yet.” Another said, “Now the answer is not clear and I think universities are still looking for solutions to all the requirements. It has good potential, but I still want more evidence.” Yet another opinion was, “I think that most needs are available and more than I had previously thought about.” This found agreement with, “I can say that most needs and expectations are met but for the fact that learning was facilitated much more than what I expected. Thank God.”

A number of the group said that some of the necessary requirements were affected by weaknesses and delays, such as, “The delay in activating the PIN number to access the

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system, causing time to slip by whilst we could not access the sites and blocking links in the sites as well as references in the e-library.” One speaker referred to, “The need for multiple sources, not restricted to e-lectures only, because some of us experienced lack of the internet connection sometimes. We hoped to find an e-learning kit as a primary source to avoid any difficulties about internet or down loading.” Another learner agreed with this, “because of the difficulty of disconnecting in the middle of download and the time consumed. “ At the other end of the e-learning process there were also disappointments. As one speaker said, “I should get my score, in a way that is easy to follow, and I should see the responses of the instructor within twenty-four hours.” One learner expressed a patient attitude when he said, “I can say its ok so far and I keep it in mind that in the beginning of any thing there are difficulties.” In the defence of e-learning one person observed, “The University asked us to attend on the registration day. Who came? This is illogical in light of e-learning.” One rejoinder still placed the fault with the administration by saying, “The University should raise awareness about e-learning and give a clear idea of standards by conferring a recognized certificate.”

In view of the mixed reactions reported here, the next section shows the learners' responses when comparing e-learning with traditional learning.

### **4.9.3 Comparison with traditional learning**

The mediator asked them to make a comparison between traditional and e-learning. The responses varied from comparing ease of access, through economic effects, to less pressure and being able to review learning for self-development, building relationships and increasing computer skills. Comments included: “You can read all lectures at one time,” “At any time, in any place but the traditional style has a particular time and place.” Positive observations were made about, “Saving a lot of expenses in motoring fuel and preserving

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the environment by reducing car travel whilst, in traditional education you have to attend whatever the circumstances.” One speaker said, “I think e-learning creates less pressure.” Another said, “In traditional lectures there are more students and I cannot ask or say anything, whilst in e-learning I can ask and listen to the lecture as many times as I like.” Learners endorsed other goals of e-learning by such comments as, “By e-learning I can develop my self and progress to life-long learning.” Another learner said, “Through e-learning I built good relations with other students.” One explained, “In fact learning by e-learning is two steps in one for me by increasing computer skills along with subject knowledge.”

With these reassurances in mind, the learners were asked about their ease with e-learning and their comments are reported below.

### **4.9.4 Ease of learning**

The group was asked whether they felt the e-learning was higher or lower than their level or just on their level. Members of the group expressed that it was sometimes higher than their level, “I feel that it is higher than my level because of absence of knowledge to deal with communication by computer in particular for me as a previous student because training courses about how to deal with computers have been given only to the fresh students.” Another agreed by saying, “I am sure it is difficult for those who don’t know how to deal with computers.” Some expressed the presence of a direct correlation between having computer skills and being equal to e-learning’s demands. One said, “Anyone who deals with the computer perfectly will face no problems.”

The above comments were followed by a query about assessment which is reported below.

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### **4.9.5 Assessment**

Subsequently, the members of the focus group were asked to what extent they preferred e-assessment by the site and the “questions’ bank” offered. There was almost a consensus on the good quality of e-assessment and its role in eliminating anxiety, its flexibility and economy. One comment was, “E-assessment is good for eliminating fear of the examination and giving you the time that you want to complete it.” Another speaker said, “It terminates the physical and substance hardship.”

However, one of them disagreed by saying, “What should we do if the internet disconnects in the middle of an examination?”

Having commented on assessment, members of the focus group were asked to comment on interaction and this is reported below.

### **4.9.6 Choices of interaction**

The members of the group were asked to describe their dealings with their lecturer and colleagues on-line and face to face and say why they preferred a certain type of interaction. The responses varied on this issue, with one of them in favour of face-to-face communication, especially after each module and most of them preferring online contact. For example a positive response was, “Once I preferred face to face then it became acceptable to be on line because I chose to learn by e-learning because of the difficulty to attend the university campus.” Another said, “Face to face is good from time to time or online contact could be used in the beginning and later arrangements could be made to meet face to face.” Nevertheless, another one felt the need for face-to-face contact with colleagues and online contact with the instructor, “Face-to-face relations are necessary with colleagues, but I think it is not necessary with instructors.” One of them said that there

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should be many live lectures at the university with the students in the room interacting with e-learning students in the same time frame. He said, “It would be good to have variety, for example live lectures for students attending the university in association with those who learn by e-learning.” Another disagreed, saying, “But the lectures at the university are designed for students in the classrooms and may be long and intense so I think the recorded one is more focused and summarizes information, being specifically designed for students of e-learning.”

The above considerations conclude a detailed report of the responses of the focus group to sub-questions three and four and to additional prompts designed to triangulate and validate the quantitative research, as well as extend knowledge about e-learning. A summary of the foregoing sub-sections follows.

### **4.10 Summary of the learners’ responses to the secondary goal of focus group**

Once the final questions had been put to the group they expressed satisfaction that all reactions, concerns and ideas had been aired so the discussion was concluded having reconfirmed the effectiveness of e-learning to provide for flexibility of time, place and pace. In spite of some hitches that could be overcome, respondents were able to perceive some benefits offered to them by e-learning that were absent from traditional method. Although the demands on their ICT skills were high, e-assessment methods were appreciated and on-line contact could be varied to face-to-face meetings on occasion. On the whole e-learning was seen as a useful development with some initial difficulties that could be resolved if suitable support measures were put in place.

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The findings of the qualitative research having been fully reported and summarised here, a summary is offered below of the overall findings of both qualitative and quantitative research.

### **4.10 Summary of the quantitative and qualitative findings**

This chapter reported the research findings from the questionnaire responses and the focus group interview. Dimensions and ratings which made it possible to compare and tabulate the results were explained.

The results of the questionnaire were tabulated, compared and summarized. Open-ended comments added to the questionnaires by some respondents were surveyed, reported and summarized, the selection and use of the focus group interview were explained and their responses to questions posed in it were reported and summarized. The secondary goal of this qualitative research exercise was explained and its results were reported and summarized.

Key points emerging from the quantitative and qualitative research showed that learners' perceptions of e-learning were that they were able to learn by this method and they enjoyed interacting on-line with the content, their instructors and their peers. Demographic factors made limited difference to the results, only previous learning by e-learning and ICT skills had some impact on the extent to which learners perceived their ability to learn or interacted with instructors. Optional open-ended comments at the end of the questionnaire revealed a degree of frustration with inadequate servicing of e-learning by instructors and technical maintenance teams and some lack of planning by the universities regarding training and administrative procedures.

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The focus group endorsed these perceptions in a live discussion and considered wider issues of e-learning in greater depth than the written comments. Thus, considerations such as physical and social health, community relations, and cultural compatibility were all touched upon. Financial concerns that had been raised in both quantitative and qualitative data collections were pursued to the point where some solutions were suggested to provide the appropriate infrastructure for universities. Training for all levels of engagement with e-learning was suggested along with improved provision of maintenance.

Overall respondents expressed satisfaction with e-learning and confidence in their ability to benefit from it in spite of initial problems associated with its novelty. The following chapter will discuss these results.

**Chapter 5. Discussion**

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**5.2 First question**

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**5.5.3 Learners' suggestions to develop e-learning**

### Introduction

In this chapter the results of the questionnaires and the focus group interview will be discussed in relation to the literature review and the context of Saudi Arabia.

The discussion will follow the same order as in the previous chapter (analysis of the data), where the first question's result will be discussed. The second question will follow and so on to the end of the chapter. It should be noted that the main question of the study was "to what extent is e-learning effective from male learners' perceptions." The main question was separated into four questions concerning their beliefs about: their abilities to learn autonomously through e-learning, their interactions with content, instructors and between each other in e-learning, the positives and negatives of e-learning and its requirements and barriers, together with learners' suggestions.

The first and second questions were addressed through the questionnaire which included 38 items divided into four dimensions: the first dimension was about autonomy in e-learning and the second, third and fourth dimensions were about interaction with the content, instructors and between the learners themselves through e-learning. The third and fourth questions were answered through the focus group interview where the data was collected about the positives, negatives, requirements, barriers and suggestions for the development of e-learning.

In the coming sections the scale described in Chapter Four facilitates a detailed discussion of learners' responses by allowing for a separate discussion of each of the top two ranges, where applicable (the first question), and a comprehensive discussion of items marked "agree" where all the responses fell within this category (subsequent questions). Further discussion covers written and oral responses. Accordingly, items are discussed according to the range into which their ratings fall and the relationships between the ratings are used to assess their perceptions of the effectiveness of e-learning. It is useful to note, in

advance, that all items received *strongly agree* or *agree* ratings and the no items attracted neutral or low ratings.

Before discussing the four questions, the correlation of variables will be discussed.

### 5.1 Correlation of variables

In this section about the demographic data: specialization, age, previous e-learning and ICT skills, the findings showed no significant differences attributed to specialisation or age. This could be due to the recent popularity of ICT and its widespread use among all specialisations and across all age groups.

Subject specialization was of great importance in this study although a study by Hong et al. (2003) found that there were statistical differences in examination results in favour of the students of science and engineering colleges compared with those attending humanities colleges. Notably, this result did not result from surveying attitudes or perceptions. On the other hand, relative to the students' perceptions, in Sawaan's study (2005), there were significant differences in student interaction with each other attributed to the type of college they belonged to with increased interaction in favour of humanities colleges.

Interestingly, the present results showed statistically significant differences in the autonomy dimension attributed to previous e-learning in favour of those who had no previous experience whilst interaction with instructors was favourable for those who confirmed previous experience. This distinction may have appeared as a result of the two universities' recent initiatives of giving intensive training courses to those students who are new to e-learning. This result, reflecting access to training before they started their learning, showed the impact of this provision and its importance, particularly in the essential dimension of autonomy. In learner interaction with the instructor the impact of

previous experience of dealing with e-learning was to enhance interaction. These two findings, together, indicate the value of training, skills and experience in e-learning. Nevertheless, this result was contrary to Alzamil's study (2006) where he concluded that there was no effect on e-learning from previous experience with e-learning.

The demographic data also showed a statistically significant difference in the autonomy dimension attributed to ICT skills, such that learners who described themselves as advanced users accorded autonomy the highest ratings. This confirmed the relevance of ICT skills to autonomy in e-learning. It could be that skilled persons can be more independent in e-learning than others feeling less need for supervision or technical support. This result agrees with Alzamil's (2006) study, which showed the effect of experience in technology on interaction with e-learning.

In summary, whilst there were no significant differences attributed to specialisation or age, there were statistically significant differences in the autonomy dimension attributed to the presence or absence of previous e-learning, showing higher ratings amongst those without previous experience. In interaction with the instructor, the converse was the case with findings in favour of those who had previous experience. Finally, there were statistically significant differences in the autonomy dimension attributed to the ICT skills of those who rated themselves as skilled.

### **5.2 The first question**

The importance of the first question arises because autonomy is the end result of the flexibility and interactivity of e-learning. In a situation where time, place and pace are unconstrained, each individual learner must operate autonomously. Therefore, this study asked, "What was the extent of the learners' perceptions of their abilities to learn

autonomously through e-learning?” The answers were found through Dimension 1 of the questionnaire, which focused on autonomy in e-learning.

### 5.2.1 Dimension 1: autonomy in e-learning

The group of items that addressed autonomy in e-learning comprised five personal statements and three impersonal statements which have been reordered below according to learners’ ratings. Below, these results are illustrated in Figure 5.1.

Figure 5.1: Dimension 1: Autonomy in e-learning

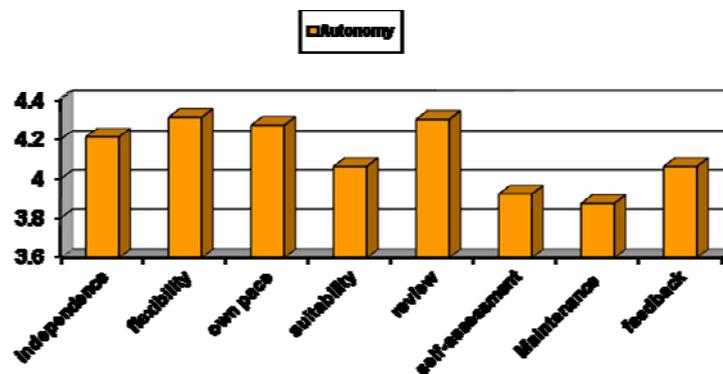


Figure 5.1 above, shows clearly that the responses can be divided into two groups; the first group consisting of four items which were all rated strongly agree, the highest being 4.31 and lowest 4.21 out of 5.00. These items endorsed the most important characteristic of e-learning, which is the facility it gives to learners to engage at any time, in any place and at any pace. This freedom not only enabled on-going learning but offered rapid reviews of past learning at any time. Moreover, e-learning adds a more personal dimension to the learning.

Having seen the significance of the high rating of these four items to the effectiveness of e-learning, the strong agreement among learners about independence in e-learning endorses the importance of the pedagogical application of technology. These questions have tested the main theme of e-learning research as expressed by many scholars (Wentling et al. 2000,

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Alsalem, 2004; Khan, 2005; Almosa and Almubarak, 2005; Zeitoun, 2008) and summed up by Holmes and Gardner 2006, as “online access to learning resources, anywhere and any time” (p.14). Thus, e-learning is shown by the present study to have achieved its key and most important objective as perceived by the students.

Autonomy and flexibility were indicated as very important by the students and they tended to agree strongly with these items on the questionnaire. This result indicates that the learners valued undertaking e-learning learn by themselves, along individually selected paths, matched to their own abilities, and suggests the importance of how individual differences are taken into account in e-learning (Khan, 2005). Further evidence of this dimension of flexibility was found in the responses to the open-ended question in the questionnaire. For example, there was a feeling that positives overcame negatives, especially in finding time and opportunities for learning (c.f. Almosa and Almubarak, 2005). The focus group interview confirmed the findings, by referring to flexibility of time and place (Homes and Gardner, 2006). Thus e-learning was thought of as giving access to information to stakeholders “around the world”, a feature that respondents expected would improve global relationships (Zeitoun, 2008). The element of enjoyment or fun in e-learning was seen as a source of its effectiveness thus raising educational achievement (Wentling et al. 2000). All of this was contrasted, by respondents, to the traditional delivery.

The learners placed the flexibility of learning as an essential condition of autonomy. On the other hand, they illustrated, in the focus group interviews, that these aspects of autonomy required adequate infrastructure and technological maintenance including equipment, speedy downloads, and reliable broadband. “If these essentials are complete, we are capable of self-learning,” asserted one respondent. In practical terms, this

requirement points to the availability of some elements and networks such as wireless, WiFi, WiMax and Mobile Connector. In addition, the capacity and speed of the bandwidth must be fit for use in e-learning. Indeed, we can say the same about the place, which must be properly appointed, without noise and interruptions. This is consistent with Higgins (2008), where he mentioned that the availability of e-learning anytime, anywhere depended on both the availability of advanced technology and that of an appropriate place to study.

These outcomes are consistent with most studies in the field, including a study by Omwenga and Rodrigues, 2006, and another by Drillon et al. 2005, both of which found that e-learning supported independence in learning; this was also confirmed by Chan, 2003, where he showed that e-learning offered self-based learning any place any time. The only contrary result is in Alzamil's study (2006) where he revealed that autonomy in e-learning is weakened by the learners' feeling that they needed the instructor. This contradiction may be due to his interpretation of students' statements which could equally arise from the complexity of the site or their lack of experience in using online learning tools. Therefore this study adds to the broader findings in this field in its endorsement of e-learning as a facilitator of autonomous learning according to learners' perceptions.

The second group in this dimension consisted of four items which were overall rated as agree. These items were about enabling learners to get immediate feedback, presenting suitable content for learners' preferred approaches to learning, enabling the learners to evaluate themselves, and getting appropriate technical support, all of which are considered significant e-learning characteristics in previous research. These ratings for these four items indicated that e-learning has clearly succeeded in fulfilling these important functions from the learner' point of view. The highest rating was accorded to immediate feedback, which was identified among the most important factors affecting the field of learning

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because it enabled learners to make timely amendments to their responses. This helps learners know where their mistakes were and guided them to make corrections until they reached the desired answers. In precise terms, the feedback given in e-learning was immediate and functioned to indicate a process of error correction, which in turn increased learners' confidence in the accuracy of the learning, completing a loop of interaction that could drive the achievement of learning objectives (Keller and Cernerud, 2002).

The focus group interview results supported these findings. E-learning was characterised by participants as a "huge jump" taken by the Ministry of Higher Education and respondents said that further innovations were awaited expectantly.

The results also confirmed that e-learning succeeded in allowing learners to learn according to their own learning preferences. This was consistent with Almosa and Almubarak's (2005) conclusion that e-learning took into account individual differences and provided an opportunity for learners to learn through their preferred styles or approaches. The present study is also consistent with Alsalem (2004) when he mentioned that learners in e-learning learned autonomously and were self reliant. Fazey and Fazey (2001) stated that autonomous learning could be independent of the instructors' help.

The results also indicated that e-learning enabled learners to feel that they could evaluate themselves. From the viewpoint of the researcher, this outcome completed the loop of autonomous learning from independent learning to self-evaluation. This finding about self-evaluation was supported by learners' comments on the open-ended questions of the questionnaire and by comments in the focus group interview. For instance, accessibility to multiple methods of evaluation was considered positively. Respondents appreciated e-learning's variety of testing formats for a fair assessment of learners' performances and its capacity to deliver information and assignments "backwards and forwards" from instructors to learners. The facility was said to relieve "physical and practical difficulties."

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This indicated the fulfilment of autonomy in e-learning and indicates its use. This result is consistent with the conclusion reached by Sanders and Morrison-Shetlar (2001) where they found that the students were able to self-evaluate effectively in e-learning.

As expected, the technical support item was the lowest rated item in this group and it was rated at a mean of 3.87 *agree*. Indeed, it is the clearest issue of agreement amongst most researchers in the literature (Alzamil, 2006). Although the responses in questionnaires showed that respondents agreed that they got suitable technical support there were complaints about maintenance in the open-ended questions at the end of the questionnaire and such reservations were expressed also in the focus group interview.

One observation compared twenty-four hour learning with the need for “around the clock the maintenance.” Reference was made to a degree of “suffering” from lack of maintenance and the need for better protection of the e-learning networks. Indeed, many comments were made that indicated that there was some kind of limitation of technical support.

It is clear that in respect of technical support there was some inconsistency between the result of the items in the questionnaire and in the open-ended comments, reinforced by the focus group interview. Indeed, the positive rating for technical support contradicted most of the studies in the field, for example, Whittington’s study (2000) where he pointed to the need for technical support and acknowledged weaknesses in this area. The causes for this disagreement could be diverse and cannot easily be inferred from the data. Firstly, in the context of the questionnaire all the items in Dimension 1 were rated *strongly agree* and *agree* and the significance of this item was obvious, influencing a response in an uninterrupted flow of positive ratings. Secondly, fewer learners may have needed technical support because of their previous experience and ICT skills; as evidence showed that 93 respondents had previous experience and 163 of them had intermediate or more capable

levels of ICT skill. The questionnaire result represented a sample of 200 compared to the smaller proportion who opted to add open-ended comments to the bottom of the question paper (35 respondents) and the focus group interview also represented a small number (21). A further explanation for this difference between the majority of respondents and those with particular issues could be cultural where the majority of respondents may have tended to give an answer that they felt would satisfy their questioner.

The most obvious finding to emerge from this dimension is that, though the e-learning experience is relatively new in Saudi Arabia, it seems to be effective, at least from the learners' perspective and this is therefore some encouragement to continue to develop this type of learning. E-learning is perceived as highly effective. This was also confirmed in the focus group interview, for example when adjectives such as "successful" and "positive" were used to describe it. The most important reasons, for e-learning's effectiveness were attributed to its innovative yet appropriate functions which allow it to meet learners' needs easily, given adequate technological support. This is consistent with Yudko et al. (2007) where it was seen that the learners' attitudes toward distance learning tended to be positive compared with traditional methods and with Liaw et al. (2007) where the conclusion that the learners' attitudes toward e-learning is influenced by self-based learning and multimedia instruction was put forward. Agreement was also found with Bernard et al. (2006) whose meta-analysis confirmed that the use of technology was highly effective in distance learning.

In conclusion, the answer for the first question of the study is that e-learners believe that they are able to learn independently, at any time and everywhere, at any pace, reviewing what they have learned any time through more personalized approaches to learning, by choosing a suitable learning approach, receiving immediate feedback, and evaluating their

own learning. The overall rating for this dimension was 4.12 *agree* according it a second place rating after interactivity of content. This dimension is the next to be fully discussed.

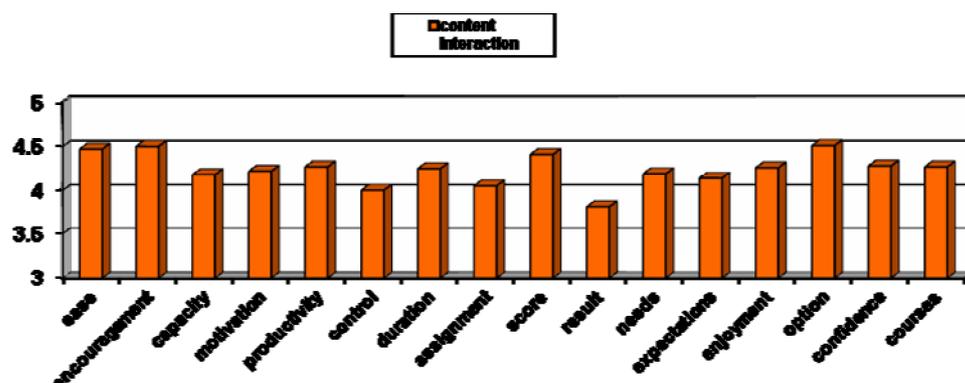
### 5.3 The second question

The second question arose because interactivity is an innovative function provided by technology that increases the range of interaction possibilities within pedagogical delivery. The question was “What was the extent of the learners' perceptions of their interactions with content, instructors and between each other in e-learning?” This question has been answered through Dimensions 2, 3 and 4 of the questionnaire. The learners’ responses are discussed below.

#### 5.3.1 Dimension 2: interaction with the content

The responses were made in answer to questions about learner satisfaction, time and tools, posed as sixteen items, all of which related to the theme of interactivity with the content. Below, these responses are illustrated in Figure 5.2)

Figure 5.2: Learner-content interaction in e-learning



Dimension 2, as shown in Figure 5.2, covers the learners’ interaction with the content, and consists of 16 items which can be divided into two groups according to their means rating.

### Q2: Strongly agree

In the first group is the majority of the items (10 items) which have *strongly agree*, the highest being 4.51 and lowest being 4.22 out of 5.00. All of these items were about the increasing sense of freedom learners derived from e-learning. The ratings showed the psychological impact of e-learning.

Although all these items were marked *strongly agree*, this overall rating for the perception of freedom offered by e-learning was the highest across all items in the questionnaire. This emphasised that the respondents believed that e-learning gave them as learners more freedom of choice and that the impact of this feature on learners' satisfaction was significant. The reason for that could be due to what e-learning presented for the learners for example, freedom of choice about the time and place of learning and their choices in ways of participation and evaluation. Thus there was less pressure perceived by learners. In this sense all the learners fully exercised their freedom to learn in an unprejudiced environment. Khan (2005) suggested that everyone in e-learning felt this equality regardless of who they were.

The next highest rated items within this dimension referred to encouragement and ease of e-learning. The results showed that e-learning encouraged learners to learn more and facilitated the process of learning. This may have been due to a number of different reasons including the capabilities within the e-learning context to present varied information in varied ways, and to the effect of in-built organisational tools.

The reasons suggested above were further supported by the focus group interview where the simple presentation of information was said to aid recall, understanding and transfer of learning. Multiple sources of knowledge increased their learning capacity, respondents explained. Related literature also supported this point, for example, Shtat (2004) stated that

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it is a characteristics of e-learning to expand knowledge, making it fun, interactive, motivational and facilitating updates and individuality.

This finding is also consistent with the study of Owston (1997) where he concluded that e-learning eased access to databases and other forms of information which saved time that could be directed to acquiring further knowledge. In addition it is similar to Alarfaj's (2001) study, which concluded that e-learning gave access to an increased capacity for content. Alturkey (2003) concluded that e-learning speeded up learning procedures, though this was not confirmed by this study and the ease of access to increased content assumes that learners have the capabilities to benefit from such access.

Learners preferred to access their grades through e-learning tools as shown by the rating *strongly agree*. The high score within the rating demonstrated their firm consent. The reason for this could be due to their desire for privacy in terms of their assessments. Additionally, it may have been because it was easier for them to review their scores any time and to find out what changes had been made. Constant access to scores may have stimulated learners to improve them.

Regarding the increase in self-confidence, increase in productivity and learners' enjoyment of e-learning, as well as increased time spent in learning and increased motivation, the ratings were all *strongly agree*. The results signified the learners' approval and, in a separate item, they showed the extent to which they were keen to take other e-learning courses. This could be due to the cumulative effect of all these conditions, for example enjoyment of e-learning would be reflected in confidence, which in turn would reflect on motivation, leading learners to increase their time for learning. Increased learning would then lead to increased confidence and productivity. Thus, all these qualities may have been perceived as being directly related so *agreeing* to one would seem to lead to the same answer for the other. The paramount issue was motivation because the environment of

e-learning is usually for just one person so if each learner were not driven by strong motivation learning would not happen. Another reason to explain these findings maybe attributed to e-learning tools which include many features that make learning more fun, exciting and efficient.

These results were supported by the focus group interview, where e-learning was seen to address needs and wants instead of being externally imposed. It was seen as offering “the highest efficiency with the least effort and in the least time” and thus improving academic achievement. Learners reported that well-designed websites reduced fatigue and increased effective activity. Online interaction aided involvement, particularly for shy students. E-learning was reported as a means of reducing self-consciousness.

When other researchers have found it difficult to account for some of the benefits of e-learning, its effectiveness has been summarized in various ways, such as by Amer (2007) who wrote of e-learning as “working to achieve educational goals with higher quality and in shorter time, effort and less cost” (p.87). This finding corresponded with Alferaihi’s study (2003) where he found that more than 50% of the respondents wanted to register for e-learning courses again. On the other hand it must be acknowledged that Johan (2003) found that direct e-learning interaction may generate tension and anxiety among students who used e-learning, suggesting that the benefits may not be achieved automatically.

### **Q2: Agree**

The second group in this dimension consisted of six items, all of them rated *agree*. The highest mean was at 4.19 and the lowest was 3.81 out of 5.00. These items were about e-learning meeting learners’ needs, increasing their absorption, meeting expectations, and their preferences for doing tasks and exams through e-learning tools, managing e-learning with its in-built assistance and developing discipline. The last item, about the marks in

e-learning, asked learners to compare their results with those received by traditional methods.

These results showed that the design of e-learning is perceived as effective as they were a direct reflection of its in-built features. Indeed, comments in the open-ended responses and in the focus group interview confirmed this result with statements of learner satisfaction that attributed increases in self-reliance, motivation and self-determination to e-learning. Comments noting the fulfilment of needs and wants were made and respondents noted that the delivery could be personalised and addressed speedily.

These findings were consistent with the findings of Owston (1997) and Alferaihi (2003), when they showed that e-learning saved time. Again there is some contradictory evidence with Alarfaj's (2001) study indicating that some believe that e-learning wastes time. This disagreement may have been due to the date of the Alarfaj's study (2001) which took place early in 2001, before the development of many of e-learning's features especially tools that specifically help learners' management of their time.

In respect of the last item in this dimension, the present study's findings show that the students believe that their marks were better in e-learning than those that the learners received in traditional learning. This is consistent with Allen et al.'s (2004) meta-analysis which found that distance learners performed slightly better in examinations and course grades compared with learners taught by traditional methods, and with Alhelih's study (2004) which also found statistically significant differences in favour of those who learned online. Although Waxman et al.'s study (2002) is also consistent with these findings, they found only a very small positive difference. Where contrasting findings are available they tend to show that there are no differences in effectiveness (e.g. Scott et al., 1999; Piccoli et al., 2001; Leung, 2003), rather than that face-to-face or traditional approaches are superior to e-learning.

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In fact, the question about any differences between the traditional methods and e-learning is highly controversial and has been debated for some time. Some studies deny the existence of significant differences whilst some show the difference in favour of e-learning. This difference is sometimes attributed to the quality of the instruction embedded in technology, not to the medium of delivery itself (Clark 1983; Kozma, 1994). Nevertheless, it is difficult for research to separate the method from the media so research and analysis in the field are complex matters. Furthermore, the dependence of such studies on measurable outcomes may mask other variables that affect on-going studies such as the time and support allowed for learning at home.

In conclusion, the answers to the second question about learners' interaction with the content in e-learning show that interaction is perceived as appreciably greater than in the traditional setting. Learners are satisfied by the quality and degree of their interaction with content, perceiving that e-learning influenced measurable outcomes and it helped them to maintain a positive attitude to learning and encouraged them to raise their expectations. This is consistent with Yudko et al. 's (2007) study where they found that the learners attitudes towards distance learning tended to be positive compared with traditional methods and with Bernard et al.'s (2006) meta-analyses where the result was that the effect of using technology was appreciable in distance learning .

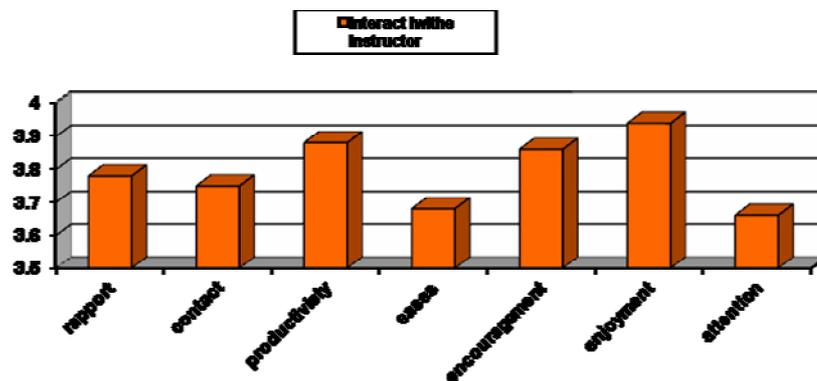
The overall rating of this dimension was 4.24 *strongly agree* bringing it to the highest and first place of all dimensions. Having established the respondents' positive evaluation of interaction with the content, Dimension 3 will be discussed below.

### 5.3.2 Dimension 3: interaction with the instructor

The responses were made in answer to questions about to what extent the learners interacted with their instructors through e-learning. The items highlighted enjoyment, productivity, frequency, ease and the learners' preferences for this means of interaction.

Below, these responses are illustrated (Figure 5.3)

Figure 5.3: Learner-instructor interaction in e-learning



This dimension, as shown in Figure 5.3 covered the learners' interactions with their instructors in e-learning. It consisted of seven items, all of which were rated *agree*. The highest mean was 3.94 and the lowest was 3.66 out of 5.00. They concerned interaction with the instructor through e-learning tools compared with face to face communication.

The results demonstrated that learners interacted and enjoyed the contact with their instructors but they rated this slightly lower than the interaction with each other. They felt that they formed positive productive relationships with instructors and felt that e-learning encouraged discussion. They indicated that they preferred to communicate via e-learning instead of face-to-face and that e-learning increased the amount of communication, and discussion they had with their instructors. Learners reported that e-learning increased the attention that they received from their instructors.

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These findings were confirmed by the focus group interview where e-learning was said to “break down psychological barriers” and where the removal of time constraints for such contacts was appreciated. These results may be due to e-learning’s characteristics that facilitate interaction and ease communication and to the fact that the internet, these days, plays a fundamental role in almost everyone’s daily life, where people do almost every thing by it including communicating with others. Nevertheless, these results disagreed with the comments on the open-ended section in the questionnaire where reports of “difficulty in obtaining responses from instructors” were made. Two persons noted this and it could be due to these learners’ individual experiences or to a lack of understanding about the role of instructors in e-learning.

In general, the findings disagreed with those of Alferaihi’s (2003), where he found e-learning weakened social relations and with Alarfaj’s study (2001) which concluded that e-learning increased isolation. This difference could be due to the features of e-learning that were available at the time of those studies from 2001 – 2003 or to the design of the specific course environment and activities.

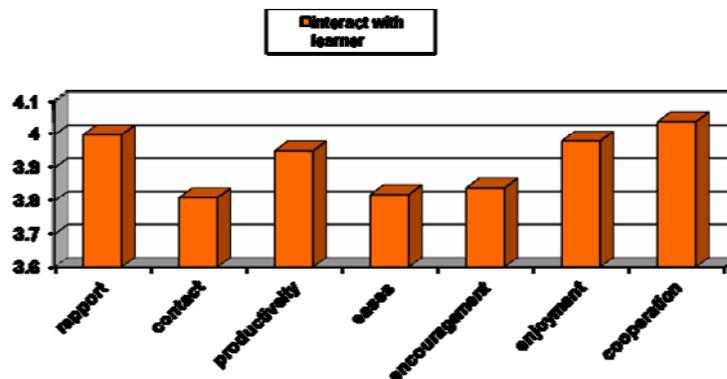
In conclusion, the answer to the second question about the learners’ interaction with the instructors was that learners felt that they interacted with the instructors, but slightly less, than amongst themselves. They enjoyed connecting with their instructors through e-learning, building productive relationships and gained encouragement to discuss things with their instructors. They preferred to communicate through e-learning to doing so in traditional settings and, in this study, they felt that they received more of their instructors’ attentions in the e-learning environment. The overall rating of this dimension was 3.80 *agree* bringing it to the last and fourth place of all dimensions. Having established the

learners' positive perceptions of interaction with their instructors, their responses to interaction between each other will be discussed below.

### 5.3.3 Dimension 4: interaction between learners

The responses were made in answer to questions about cooperation, frequency and ease of communication, and the productivity and encouragement arising from it, as well as offering learners an opportunity to state their preferences for this type of interaction over traditional means. Below, these responses are illustrated in Figure 5.4.

Figure 5.4: Learner-learner interaction in e-learning



This dimension, as shown in Figure 5.4, above, covers the interaction between learners in e-learning. This dimension consisted of seven items. All of them were rated *agree*, the highest being mean 4.4 and the lowest mean 3.81 out of 5.00. They concerned interaction between learners through e-learning tools compared with face to face communication.

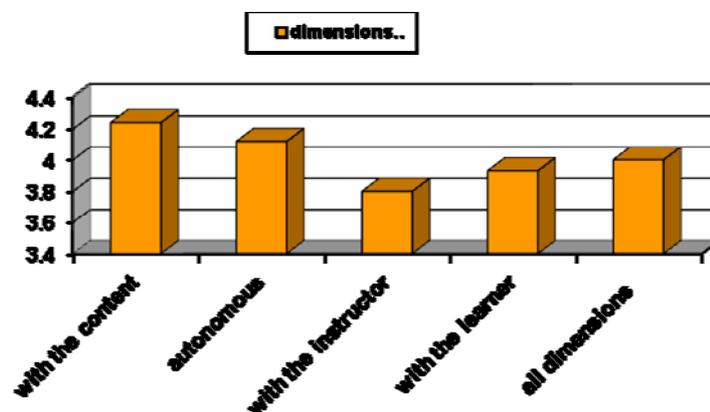
The results showed that respondents perceived their interaction and communication with each other as more frequent and productive than their interaction with the instructors, having used e-learning to increase cooperation among themselves. The learners showed that they enjoyed connecting with each other electronically and they built positive relationships whilst e-learning encouraged them to participate in the discussions and increased communication amongst peers.

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These results were confirmed through the focus group interview where statements endorsed communicative ease and mentioned useful e-tools such as discussion boards, e-mail, and chat rooms. However, this result was opposed in the focus group interview by some reservations regarding the “silent generation” and emotional and social repression. These results may be due to the features of e-learning that ease communication and simple interaction and to the existence of the internet and its characteristics which has an essential role in everybody life and in every way, especially as a communication channel. Like Alferaihi (2003) and Alarfaj (2001), the focus group perceived the drawback that e-learning weakened social relations, although the questionnaire findings did not concur. However, the same positive tendency was found by Sanders and Morrison-Shetlar’s study (2001) showing that learners felt able to interact with their colleagues.

In conclusion, the answers to the second question about learners’ interaction with each other were positive. The overall rating of this dimension was 3.92 *agree* where it came in the third place in the order of the four dimensions. Regarding the overall rating of all four dimensions which indicated that learners agreed highly in three of the dimensions and *strongly agreed* in one, the following Figure 5.5 illustrates the overall ratings for each dimension. They will be compared in more detail below.

Figure 5.5: Order of the dimensions



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It can be said that the rating of interaction with the instructor at the last place may be an indicator of autonomy and a resulting tendency to limit reliance on the instructor. By rating the dimensions in this order, the present study is consistent with Chan's study (2003) in which he suggested that content functions are more effective than communication functions in e-learning. It is noticeable that none of these dimensions were rated *neutral*, *disagree* or *strongly disagree*, and no item was rated below a mean of 3.66 out of 5.00, and this final outcome suggesting clearly the effectiveness of e-learning as perceived by the students. The goals of autonomous learning, any time, any place, any pace, which imply flexibility as well as learner interactivity with the content, other learners and instructors were achieved. Concerning the result of the comparison between the two universities, the similarity in the order of the dimensions may be due to some streamlining in the establishment of e-learning, selecting parallel resources with the same software features, targeting equally apt learners, and promoting interest in e-learning.

The findings in this regard fit with the meaning of independence in learning mentioned by Drew and Bingham (2001) where they defined the concept as the learner's full responsibility for his learning climate, and with Fazey and Fazey (2001) who characterised it as learning independently without relying on the instructor. Moreover, Garrison and Anderson (2003) considered that all forms of learning are a kind of interaction between instructors and learners and the content which is either a human interaction or a non-human one where effective interaction implies effective learning. In addition, it is consistent with Bernard et al.'s (2006) meta-analysis regarding importance of all types of interactions (learners, instructor or content) which found that there was a strong relationship between the strength of the interaction and increased achievement outcomes. Cavanaugh's (2001) meta-analysis also showed a small positive effect in favour of distance learning but with increased effectiveness related to the more interactive distance

education programs. However, the novelty effect should be borne in mind and the result seen with caution for novelty is double-edged and can contribute differentially to failure and success.

To summarize, it was evident, from the study so far, that learners' perceptions of e-learning endorsed its effectiveness. They found e-learning a flexible tool that allowed them to interact with the content, their peers and their instructors whilst perceiving that their ability to learn was enhanced by e-learning's availability for use in any place, at any time and at any pace.

### 5.3.4 Questionnaire comments

The learners' open-ended comments can also be related to the dimensions of the study. Because the questionnaire was designed to identify the extent of the effectiveness of e-learning from the learners' perceptions, matters relating to the infrastructure fell beyond the initial brief. However, it is clear from these comments, that the learners themselves felt that the effectiveness of e-learning was challenged by inadequately prepared infrastructure and by regulations that took little account of the essential features of e-learning which are its accessibility, usability and flexibility at any time, in any place, at any pace. Some learners referred to more familiar technology and wished that there were some graduated introduction to e-learning through this technology. Others envisaged such training in separate ICT training courses. This discussion summarises the open-ended comments in the light of the methodology, by giving prominence to themes raised by the respondents. The themes were identified as follows: technical remarks (technical support, connectivity, slowness and usability); communication (functions and tools), and, training and gradual or partial application.

### Technical remarks

The need for technical support was noted in such comments as “since e-learning is available around the clock the maintenance should be available the same way.” This finding was supported by the focus group interview, in disagreement with the result of the items relating to technical support in Dimension 1, as mentioned above. The reason for that disagreement may be attributed to the learners’ understanding of the nature of technical support and their level of IT skills, for example some learners expect the technician to address other issues with their computers. In fact, comparing this finding with the relevant questionnaire items suggest that most learners were satisfied with technical support.

The comments listed below may be due also to the level of the learners’ ICT skills as the lower the level of ICT skill the greater the need for technical support. The number of novices in the sample were 37 whilst intermediate skilled users numbered 105 and this undoubtedly affected reports of repeated disconnections and slow uploads such as was referred to as “difficulty in connecting to the program’s website....the delay in technical support”, “non-updated”, “complexity” and “difficulty of access to the site and its many icons.” The opposite response was shown in such phrases as “E-learning has pros and cons and the positives overcome the negatives... as it is not necessary to go to university for ease of access and connection with the instructor.”

Indeed, negative outcomes can not be explained in isolation from their causes, which may stem from within the university, or may not relate to the university but from, for example, the public telecommunications infrastructure or the location and quality of membership of learners to their own internet server and the quality of hardware that each dissatisfied learner used. It could be that learners needed some update of their software or wider issues such as more experience.

### **Communication**

The results showed that communication was not invariably good, as a few learners wrote items complaining of “difficulty in obtaining responses from instructors” It appears that learners had concerns about the universities freeing instructors to respond to their needs. Therefore they considered it an organisational problem rather than an e-learning problem, implying that, when learners asked the instructors about not responding in a tight time frame, the instructors may have referred to lack of time because of their workload. In the same context the findings showed worries about in obtaining electronic references in words such as, “it is hard to find the references and e-references in the library and e-library; they should make sure about their availability before the referral.” In fact this may have been due to the processes in the universities’ libraries where they were still digitizing their contents.

### **Training and gradual or partial application**

The findings showed that there was a demand for further training for example “I feel... absence of knowledge to deal with communication by computer”, “the computer and internet must be studied as a subject for all before e-learning.” Demand for gradual application and use of mobile phones to assist initial e-learning and ease communication also featured in written responses. The results indicated the learners were aware of the importance of technology as “the language of these times... not a luxury neither is it recreational but...a necessity.” Similarly, known side effects were noted as potential effects “on health and physical fitness” together with fears that “talents... will disappear because of isolation.” Reservations were also revealed about the appropriateness of e-learning for all subjects “e-learning is excellent in arts not in science.” This showed the presence of some desire to return to the traditional way in the subjects that need laboratories or practical procedures and this could refer to experiments in science subjects. On the other

hand, other learners missed books, expressing a preference for printing their resources. This could be a reaction to the complexities of ICT technology and increased familiarity with its use everywhere.

All of these comments point to the feeling that universities could take some responsibility for both preparing e-learners for and safeguarding e-learners from the impact of their engagement with technology. However, the written comments also showed positive aspects like e-learning advantages, such as by commenting on life-long learning.

The written comments reflected many of the findings in related research cited in Chapter Two of this study, the literature review. The findings are therefore consistent in terms of reaching similar conclusions about the existence of technical problems (Collins et al. 1997; Lewis, 2000), learners' isolation (Almosa, 2002; Khan, 2005) and learners' demands (Weggen 2000; Codone, 2001) as well as some of the other reservations mentioned above. It is worth mentioning, before leaving this section that the lack of consistency between such written responses and the learners' answers in the questionnaire could be due to the reasons mentioned in Dimension 1 p.217.

The report of respondents' responses in the focus group to the third and fourth questions "What are the positives and negatives in e-learning, requirements and barriers, and suggestions" were offered in the order the participants spoke and, in the discussion, the order is broadly unchanged but sub-headings have been introduced to point the relevance of these comments to existing themes in the literature e-learning. Triangulation and validation of these open-ended comments was embedded in the research plan as a secondary goal for the focus group interview's live discussion which was held following the completion of the questionnaires. Similarly, the focus group's comments will be discussed, after which the

sub-goal of triangulation and validation will be fully considered along with the extension of knowledge about e-learning that has been achieved by this work.

### **5.4 Third question: the positive and negative aspects of e-learning**

The question “What were the positives and negatives of e-learning according to the learners’ perceptions?” was put to participants in the focus group interview. The following sections discuss their responses from this forum.

#### **5.4.1 Positive aspects of e-learning**

To begin with, the findings demonstrated very positive perceptions of e-learning, describing it as “successful by all standards”, “a wonderful and economic idea” and the like. This indicated the effectiveness of the current experience of e-learning from their personal perspectives. This result is compatible with the ratings shown by the questionnaires and with some studies in the field such as Sawaan’s study (2005). Drillon et al. (2005) found that 50% of the learners they studied were satisfied with the learning in e-learning and Whittington (2000), Hong et al. (2003), Alaugab (2007), Yaghoubi et al. (2008) all reached the conclusion that there was general acceptance of e-learning, among their respondents.

A close analysis of the transcripts indicated that the positives of e-learning mentioned by learners were diverse. The most important will be presented under the following themes: meeting needs and interests, offering motivation, giving access to information, easing repetition and review, offering a choice of assessment, encouraging global and local communication and cooperation, mitigating personal limitations, helping creative thinking, popularizing IT skills, increasing equality, solving problems and presenting economical and effective educational options. The content of the respondents’ comments in the focus

## Chapter Five: Discussion

group interview is classified thematically for discussion purposes. The following quotations from the results are shown clustered below to increase the continuity of the discussion.

- E-learning meets learners' needs and interests: "e-learning is based on what I need and... it was not imposed" may have been a response to e-learning's software features.
- E-learning increased the motivation to learn: "constant excitement and activity" and "learning for a long time without exhaustion" were phrases used by participants in the focus group, to describe the motivating influence of e-learning.
- E-learning facilitates access to information and presents it in multiple formats: "e-learning is suited to different methods of education ...to meet all learners' individual styles".
- Ease of repetition and review by e-learning: "in e-learning I can ...listen to the lecture as many times as I like."
- E-learning has various assessment methods: "a variety of different and more accurate tests... used for a fair assessment." Furthermore the utilization of e-learning tools to deliver information and assignments backwards and forwards between the instructor and the learners was considered "both quick and professional."
- E-learning reduces shyness, improves confidence and breaks barriers: "very useful for students who are shy and anxious... gives students greater confidence"; some colleagues who rarely talked or, debated for fear of mockery were more involved"

These results above are consistent with the results of questionnaire, as discussed above in relation to the researches that concur or differ with it in Dimension 2 (p. 223).

Other dimensions were also mentioned such as that e-learning encourages both local and global communication and cooperation (Khan, 2005), with phrases such as it is "important

in this era... to maintain openness in communication and interdependence with others...all over the world... [For] cooperation through joint research and dialogue” with an appreciation of the need to “spread the ideas, between people, exchange knowledge, and reduce barriers” testified to participants' realization of the potentials of e-learning. This included the economic, political, and measures against embargoes on some ideas and cultures amongst other ideas. This result was broadly consistent with the results of the questionnaire, which were discussed above and compared with similar studies in Dimension 3 and 4 (p. 229, 231).

In terms of e-learning helping with in creative thinking (Urdu and Weggen, 2000), comments such as “we learned by memorizing things now... [we] think analytically and logically” point to the ease of access to information. This allows the learners to focus on the production of new and non-repetitive ideas arising from their recognition of intellectual products from all over the world. Together, e-learning and the internet were said by one respondent to “create a dynamic vital system to transfer world events directly and make education global.” This perception may be due to the e-learning environments and to the applications of software that helped users to solve problems or use concepts coherently. Learners were enabled to read and see examples and role models through e-learning and the internet, which led them to develop similar ideas.

Another dimension discussed in the interview was the acquisition of ICT skills (Codone, 2001), where phrases, such as “students were able to master the skills,” showed participants' appreciation of e-learning's contribution to popularizing ICT skills. This may be due to e-learners recognising the necessity of dealing with technology, both hardware and software, both within and beyond university. They acknowledged the computer and internet skills e-learning gave them and the ability to benefit from future technology.

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Respondents showed their appreciation of e-learning's contribution to equality (Zeitoun, 2008) when they referred to availability of information “at the time of publication... producing equality of information” They discussed relative costs and showed concern for “reducing the cost of education.” This perception is due, again, to e-learning features that apply to all users regardless of the learner’s social, ethnic and religious allegiance.

The learners’ perception that e-learning is economical and achieves its goals with increased efficiency, with minimal effort, and in less time (Amer 2007), was articulated by phrases such as “e-learning works effectively... there are no requirements to engage concurrently as to the time or place or learner’s age.” and by helping to “raise the return on investment by reducing the cost of education.” which, one said “implies speed, compared to traditional methods.” “In particular reduced time was needed for research on a particular topic by using e-learning.”

Examples of the participants’ awareness of e-learning’s positive impact on education included phrases such as “the solution of many problems such as the knowledge explosion, the unequal flow of information and the demand.” They said it helped to “expand opportunities for admission to education ...thereby contributing to raising the literacy rate.”

This section has shown how the participants in the focus group discussion perceived how e-learning had met their needs and interests, supported their motivation, had given access to information, eased repetition and review, offered a choice of assessment, encouraged them in global and local communication and cooperation, mitigated some personal limitations, helped them to think creatively, popularized ICT skills, increased equality, helped to solve problems regarding their access to information and presented them and others with economical and effective educational options. Similar conclusions were found

in much of the research discussed in the literature review Chapter Two of this study and mentioned in the paragraphs above. Having considered these positive perceptions in some depth, the negative aspects noted by the participants will be presented below.

### 5.4.2 Negatives aspects of e-learning

The analysis of the focus group's comments indicated that the negatives of e-learning are wide ranging. The most important will be presented thematically as lack of social relationships, contradictory information, health hazards, limitations on sensual perception and opportunities to excel, problems of time wasting and boredom, the cost of keeping up with changes, the avoidance bad influences and of plagiarism. These issues are similar to those found in the existing literature.

In terms of a lack of social relationships (Alshehri, 2002, Lewis, 2000), the suggestion of "a silent generation who are not comfortable in the art of dialogue" was inconsistent with the results of questionnaire which were discussed above in Dimension 2 and 3 (p. 223, 229) together with the research that agreed or disagreed with this social drawback. Participants noted "the absence of the human side in this kind of learning" suggesting that learners missed out on "the important life skills... such as listening, writing and interaction with peers and taking part in talk, dialogue and discussion." These were perceived as "actual life practices." This indicated that this type of learning may be lacking in real social experience and real interaction because all of the learners lived in different areas so their interaction was not physical and tangible, as happens in traditional learning.

The challenge of contradictory information (Alarfaj, 2001), was raised by some in terms of the suggestion that some "websites [were]...misleading, erroneous and dishonest" indicating the decisions and judgements that the learners faced in e-learning, whenever

they searched for information. It could be due to the presence of open encyclopaedias and personal websites in which content is not necessarily reviewed or vetted. Participants also referred to the disadvantage of wasting “time surfing new programs and sites” and “the emergence of technological innovations and the need for the replacement of hardware and rapid switching of software” which they said wasted not only time (Alsalem, 2004; Amer, 2007) but also money (Alferaihi, 2003). This suggests that e-learning and technology might win by one hand and take back by the other, helping to save and manage time, but simultaneously, encouraging loss of time, due to the large number of new sites, social networking options and other forms of interest which were not easy for learners to resist.

Learners also expressed their vulnerability “to copy and paste”. This could be due to the lack of academic sophistication, ranging from minimal awareness of the problem of plagiarism (Michel, 1996; Whittington, 2000), to more important difficulties in assimilating a variety of literature.

Some students commented on issues related to health and well being (Alarifi, 2003). For example mention was made of “poor seating posture, eye strain, repetitive use of the hand muscles, curvature of the backbone and exposure to radiation”. Negative effects that were perceived included the habit of using a calculator instead of using the brain, and psychosocial effects were noted, such as the demise of reading from print and difficulties with emotional development. Dealing with e-learning continuously was said to lead to isolation among learners that may “have a long term effect on the personality” because of “the absence of the human side in this kind of learning.” Participants likened these negatives to “addiction...which will affect the relations of family and work.” This suggests the difficulty that learners perceived which may have been due to some defects in the design of equipment such as the hardware, like the mouse and keyboard, that demanded repetitive movements or the screen that induces certain postures, or the software that may be

unsuitably coloured with poorly located icons or other detractors from the quality of the software. Physical effects may also have been felt from the furniture, like the chair and the table or from the way the learner sat.

E-learning was criticized for its use of “hearing and vision, whilst other senses were ignored”. It may be possible to work with these senses and involve them in learning when further technological developments have taken place. This was also related to the complaint that there was just one content for all and the relative monotony of the information (Almosa, 2002). Mention was made of “the same content, without taking account of each learner’s own learning style.” This somewhat disagreed with the questionnaire responses. Several respondents said they had found suitable alternatives with similar content on the internet.

Some participants felt that e-learning offered inadequate opportunities to excel as “e-learning will not be able to identify [talent], because e-learning has a specific framework.” This perception may be due to e-learning programs' specific frameworks that cannot be overridden.

One negative perception was that the “amount of technology makes me bored because of...hardware and software used in the educational process.” This could be due to overload of technology being found everywhere: in the home and in the car, at work, in the hospital and at the bank, indeed, in every human environment. This tendency may also be due to lack of social networking or to high expectations from the learner about ICT, particularly when technologies are compared with more advanced forms available to some students in their homes and personal lives. This continuing evolution and constant change was also seen as a negative, for example “it is hard to take up the emergence of fast-changing

technological innovations”. This may be due to the pressure on learners to pursue new technical developments, which are expensive so the learner fears being left behind.

In summary, the negatives mentioned by the focus group are broadly similar to those found in the existing literature. These included the lack of social relationships, contradictory information, health hazards, limitations in terms of sensory perceptions and in terms of opportunities to excel, problems of time wasting and boredom, the costs of keeping up with changes in technology, as well as other issues such as the avoidance of low quality or questionable information, of plagiarism and in terms of monotony in terms of the presentation of information. It should also be noted that overall their responses were positive, so these negative aspects should be considered with this in mind

### **5.5 Fourth Question: Requirements and barriers and suggestions for the development of e-learning**

The focus group was invited to comment on “What were the learners' perceptions of the requirements and barriers facing e-learning and their suggestions for the improvement of e-learning?” Their responses are discussed below.

#### **5.5.1 Requirements**

The findings showed a number of requirements for e-learning, including planning, infrastructure, finance, policy and human resources, and protection of intellectual property. These will be discussed below.

Planning was a key issues identified by the participants' who viewed e-learning as a project “requiring, prior ... specification of ...objectives.... characteristics ... potential benefits and risks... feasibility and ... problems ...limitations and constraints" demanding that

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procedures should be analysed before implementation. This may indicate learners' unwillingness to make the sudden transition from traditional methods to e-learning or it may be due to the issues of difficulties and lack of familiarity that come with every new beginning. It may be symptomatic of their resistance to the rapid and frequent changes in the applications or to their uncertainty about the feasibility of this type of learning.

University's responsibilities in terms of infrastructure were also raised. Incompatibility was an issue and participants felt "the university should develop the hardware to suit the software and the same thing could be said to us as learners about choosing compatible hardware." Quality and up-dates were considered essential. This was consistent with their demand for technical support as noted elsewhere.

Lack of funding, personal and institutional was noted by the group. This showed a weakness in this issue, which may have led to the observed lack of technical support. This also related to wider issues of resourcing such as the provision of competent human resources: participants noted that "the provision of competent, well trained personnel if not more significant ... is equal to the infrastructure." In a similar vein, training for all those involved with e-learning was also emphasised. Participants stressed that "training includes all parties - e-learning teams and administration, learners, lecturers and others, before and during the application, by effective and sufficient preliminary courses and by frequent short and intensive refresher courses, including theoretical and practical input given by experts and specialists in the field." This indicated that there was a weakness in the training courses that the university put on or that stakeholders did not take full advantage of ICT potential which may be due to the rapid developments in hardware and software.

Other institutional issues raised were policies and guidelines on academic integrity: the

requirement to secure intellectual property was seen as urgent to avoid “damage [to] the reputation of the university and its outputs.” This referred specifically to the phenomenon of plagiarism.

Planning, infrastructure, finance, policy and human resources, protection of intellectual property all represented areas that required attention, according to the learners' perceptions. These requirements were in agreement with those mentioned above, particularly in comparable studies such as Alshehri (2002), Alfeleh (2004), and Amer (2007).

### 5.5.2 Barriers

Having discussed the requirements for e-learning as perceived by participants in the focus group interview, their perceptions of the barriers will now be discussed under the themes of technical problems, viruses, inadequate designs, apathy, lack of ICT related knowledge, lack of finance, materialistic greed and credibility of online content.

Technical problems included “difficulty of access ... slow browsing... especially at peak times”, “lack of maintenance.” and “viruses causing many problems and losing data”.

This shows that there were some technical obstacles, and this may be due to reasons outside the university such as poor public networks, or it may be due to the lack of learners' skills in dealing with the e-learning. Some degree of the risks may also be due to weak firewalls. Problems with managing information, once accessed, extended from selection to “getting it, dealing with it and using it.” This may be due to the abundance of information found by learners and their lack of clarity about mechanisms to critically evaluate it. Again a related point was that participants felt they were vulnerable to ill-founded information and that sites may lack credibility. This may be due to the easy access to a wide range of sites and the presence of sites of unknown origin, or with questionable

information that serve their own purposes.

Participants pointed to “lack of ability to design and produce a good quality of educational content”. This indicated some shortcomings in e-learning programs due to the companies that design and produce these programs, who may lack knowledge and understanding of the field of education and relevant learning theories. Because English was not their first or second language many felt that there was a risk that “credit will go to those who are fluent in English.” This indicated the lack of Arabic content on the internet and this may be due to the weakness of the Arabic production and the absence of Arabic translations on many sites.

Respondents felt there was “rejection and resistance by some to the use of e-learning.”

This showed the presence of resistance which is a known phenomenon in the science of administration. In this case it may be due to the lack of clarity of working roles and to some lack of clarity of e-learning goals. This was related to learners’ perceptions of a “lack of...necessary skills to use computers and the internet” among “instructors and administrators” who they felt were not capable due to “technological illiteracy” This could be due to lack of awareness of the importance of technology and its relation to human life in all aspects or to lack of skills and training in ICT.

Participants realized that the educational budgets needed to support the introduction of e-learning were considerable. In short, some were discouraged by their assessment of recurring costs. This may be due to unease about future financial support for e-learning programs. They also feared that the profit motive might drive e-learning because businesses might aim to profit from education regardless of the value of their contribution. This showed the profitability of companies may dominate the field of e-learning programs

without consideration of educational returns.

These barriers of technical problems, viruses, inadequate designs, apathy, and lack of ICT related knowledge, lack of finance, materialistic greed, the credibility of cyber content and the availability of Arabic sites compared closely with those suggested in related literature by Almosa (2002), Alsalem (2004). These studies were fully discussed in Chapter Two.

### **5.5.3 Learners' suggestions for the development of e-learning**

The analysis indicates a set of proposals made by the learners to develop e-learning, the most important being the provision of support, gaining financial support, protecting hardware and software adequately, interesting educators, offering training, and providing Arabic sites. These are summarised below and picked up in the following chapter in terms of recommendations:

- Raising awareness of e-learning
- Involving educators in the design of e-learning materials
- Increasing relevant Arabic content on the Internet
- Compensating for low human interaction.
- Providing financial and human and technical support
- Reducing the influence of the profitability motivation
- Benefiting from the developed countries
- Getting help from the private sector
- Strengthening training
- Establishing/ using scientific standards
- Reducing the negative health side effects
- Protection from viruses and hackers

## **Chapter Five: Discussion**

Many of the above suggestions were mentioned in much of the literature review. Chapter two of this study gives examples of these similar studies including (Almosa, 2002, Alshehri, 2002, Alsalem, 2004). Indeed, most of the studies proposed selections of similar suggestions to these from the focus group in this study.

The foregoing chapter has discussed the results of the present study which showed that e-learning was positively perceived by all the learners and that they were aware of its limitations and constraints as well as its potential for further development. Within the limitations of the methodology of the study therefore, clear conclusions can be drawn about their perceptions. The following final chapter will offer the conclusions and recommendations of this study based on the perceptions of learners identified through the questionnaire and focus group interviews.

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## **Chapter Six: Conclusion and Recommendations**

### **Introduction**

In this chapter a summary of the results will be presented and some recommendations will be provided. This will be undertaken in a similar order to the analysis and discussion chapters where each question is presented in turn followed by its conclusions. After that the recommendations, limitations and contributions will be presented, followed by suggestions for further study. It should be noted that the main question of the study was “To what extent is e-learning effective from male learners’ perceptions?”. Four questions then derived from this. The first and second questions were addressed through the questionnaire and third and fourth were addressed during the focus group interview.

### **6.1 Correlation of variables**

The results showed that there are no differences in learners’ responses attributed to specialization or age. On the other hand there are differences attributed to previous learning by e-learning for those who say no in the dimension of ability to learn autonomously and for those who say yes in the dimension of interaction with instructors. Furthermore there are differences in the dimension of ability to learn autonomously attributed to those who were skilled in ICT.

### **6.2 The first question**

“What was the extent of the learners' perceptions of their abilities to learn autonomously through e-learning?” This question was answered through the first dimension of the questionnaire (ability to learn autonomously) and can be summarized as follows: learners in e-learning are able to learn independently at different times and at their preferred pace, and they feel they are able to review at any time what they have learned. They perceive that the learning in e-learning is personalized and what is presented to them fits their preferences. They also feel that they get immediate feedback through e-learning, and are

able to self-assess.

### 6.3 The second question

“What was the extent of the learners' perceptions of their interactions with content, instructors and between each other in e-learning?” This was answered through the second, third and fourth dimensions (interaction with the content, with the instructors and among themselves) which is summarized in the subsections below.

#### 6.3.1 Dimension 2: Interaction with the content

The learners perceived that they were very highly interactive with the content and felt great freedom while dealing with e-learning, which encouraged them to learn more, and facilitated the learning process, as they preferred to receive their grades through its tools, thus increasing their confidence and productivity. Hence, they would like to take other e-courses, as they enjoyed learning by e-learning, and it encouraged them to increase the time spent in learning, and increased their motivation by meeting their needs, and expectations, and increasing their capacities to absorb learning. Moreover, they preferred to perform their tasks and examinations through e-learning's tools. E-learning also helped them to manage their time and be disciplined. In addition, their results were better by e-learning compared to traditional learning. Finally, the rating for this dimension was 4.24 *strongly agree*, placing it in the first place on the scale of all dimensions.

#### 6.3.2 Dimension 3: interaction with the instructor

The learners reported they were interacting with the instructors but a little less than they interacted among themselves. They enjoyed contacting the instructors by e-learning tools and felt that they built productive relationships with them and were encouraged to discuss things with them, preferring to communicate through e-learning compared with the

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traditional way. Consequently, their communication with the instructors increased and the instructors seemed to pay more attention to learners in e-learning environments. The rating for this dimension was 3.80 *agree*, according it lowest place in the order of the four dimensions.

### 6.3.3 Dimension 4: interaction with learners

The learners were interacting with each other, slightly more than they interacted with the instructor. They co-operated with each other and preferred to communicate by e-learning tools rather than conventional means. Learners reported that they enjoyed this way of contacting each other and they built productive relationships with each other. They felt that e-learning encouraged them to participate in discussions among themselves and facilitated and increased communication among them. The rating for this dimension was 3.92 *agree* and it came in third place in the order of the four dimensions.

It can be noted that none of the dimensions or their items got less than *agree*, the lower rated items got an average of 3.66 *agree*, the final outcome showed clearly the effectiveness of e-learning, as perceived by the learners, in achieving its goals of learning anywhere, anytime, any pace, which implied the flexibility of e-learning as its capacity to support interaction with the content and learners and instructors. In short, e-learning is essentially interactive from their perspective. Moreover, it is clear that these two features, flexibility and interactivity, are, indeed, valued as the most important features in e-learning.

### 6.4 Written open-ended comments added to questionnaires

There were 35 questionnaires with comments out of 200 which amounted to 17.5 % of the sample. The most important comments conveyed opinions which are summarized below.

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In principle, the learners showed high praise and appreciation for e-learning's effects of accustoming them to self-reliance and helping them to teach and assess themselves. On the other hand they noted some technical observations, for example, a need for technical support and maintenance around the clock, and the need for up dated infrastructure signaled by the presence of frequent breakdowns, slow browsing and some usability difficulties like dealing with multiple icons. They also stated that there was a lack of communication particularly with instructors due to various communication difficulties including delayed responses. In general the comments showed that the level of communication may not be sufficiently high. Consequently, they demanded training in the use of computers and the internet, additionally requesting gradual and professional applications of e-learning with the capacity to upgrade continuously to take full advantage of all e-learning's features. Respondents recommended the use of mobile phones to assist e-learning. In addition they called for the improvement or removal of the harmful side effects associated with technology, whether physical, mental, or social. Complaints cited loss of time dealing with e-learning. Furthermore the result of this question showed concern about some regulations in e-learning, such as the denial of access to those who suspend their studies for a period. Some comments showed nostalgia for traditional learning. A feeling was expressed that e-learning may succeed in science more than arts subjects.

After having reviewed the questionnaire's contributions to the answers to the first and second questions, we turn now to the summary of results for the third and fourth questions derived from the focus group interview, where the total number of respondents attending the focus group interview were 21 out of the 200 respondents, which accounts for 10.5% of the total respondents.

## **Chapter Six: Conclusion and Recommendations**

### **6.5 Third question: the positives and negatives**

“What were the positives and negatives of e-learning according to the learners' perceptions?” In the coming section a summary of the most important results obtained from the focus group interview with regard to the positives and negatives of e-learning will be presented.

#### **6.5.1 Positive aspects of e-learning**

A number of positives were mentioned. The most important concern the learning experience of individual users, increased ease of access to knowledge, increased access to contemporary skills and topics.

Regarding the learning experience of individual users of e-learning, the research found that it met the needs and interests of learners whilst taking the learners' differences into account giving them self-reliance and helping them begin continuous learning for life. E-learning stimulated creative thinking and logical analysis and helped learners to produce new ideas. E-learning increased learners' motivation to learn. Learners reported more generalized psychological changes also such as reduction of shyness and increased confidence. All of this combined to break their barriers to communication.

Regarding the capacity of e-learning to make knowledge more readily available respondents noted that it facilitated access to information by presenting knowledge in multiple formats and from a variety of sources to suit every style of learning. Multiple reviews of previous studies helped to consolidate learning and there were varied methods of assessment so that anxiety was reduced.

The information and contacts made available by e-learning increased communication and

## **Chapter Six: Conclusion and Recommendations**

cooperation in the local and global information sectors. It encouraged learners to acquire the skills to deal with technology in addition to their learning within their chosen fields of study. In e-learning equality of access to information was achieved between all learners, regardless of geographical location, personal character or time constraints. E-learning provided solutions to the problems of traditional learning such as too many learners and too few instructors and offered some solutions regarding the explosion of information. E-learning was found to be both economical and efficient.

### **6.5.2 Negatives aspects of e-learning**

A number of negatives were mentioned, the most important could be summarized as personal and academic. There was no overall consensus in the respondents' negative comments. Personal reservations included the effect of e-learning in weakening social relationships and increasing isolation. This could extend to undermining opportunities to discover talent. Isolated study may have mental, physical or social side effects including loss of stimulation to a range of senses such as hearing, seeing, touching and tasting.

Regarding academic progress, learners believe that e-learning can lead to conflicting information. Some learning preferences may not be served as e-learning provides the same content for all learners. Undesirable practices may arise such as cutting and pasting leading to plagiarism, exposure to inappropriate sites and distracting advertisements. Boredom can arise from dealing with widespread and numerous technological applications. Technological costs can also be incurred that are difficult to meet.

Having completed the summary of the respondents' perceptions of positives and negatives, the summary of the requirements and barriers and proposals for the development of e-learning from the viewpoint of the learners follows.

## **Chapter Six: Conclusion and Recommendations**

### **6.6 Fourth Question: requirements and barriers and suggestions for e-learning**

“What were the learners' perceptions of the requirements and barriers facing e-learning and their suggestions for the improvement of e-learning?” In the coming section a summary of the most important results obtained from the focus group interview with regard to the requirements and barriers facing e-learning and learners' suggestions for the improvement of e-learning will be presented.

#### **6.6.1 Requirements**

The results showed a number of requirements, the most important being planning and preparation, training and safe-guarding. In the planning and preparation for e-learning updated infrastructure suitable for e-learning applications should be built. Financial support should be provided for e-learning projects and qualified human resource personnel should be provided to assist e-learners and professional providers. Training should be offered to all who deal with e-learning whether administrators, learners or instructors. Issues to be safe-guarded included sufficient care taken to maintain standards of academic integrity and the preservation of copyright. Gradual implementation of e-learning was thought to be necessary to allow for such measures.

#### **6.6.2 Barriers**

The results showed a number of barriers, summed up as the users' technical problems, attitudinal problems and provider problems. Users encountered barriers with technical problems such as difficulties contacting and accessing the website and slow browsing, and lack of maintenance. Their lack of protection led to the existence of some viruses and other such hazards. They felt that some of the contents of e-learning were inadequately designed and they found it difficult to manage the information.

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Learners felt that some members of university administration seemed to lack enthusiasm and that learners, instructors and administrators were hampered by lack of knowledge of the computer. Those who lacked financial support feared that it hindered development whilst they felt that in some companies there may be a danger of focusing on the investment returns at the expense of education. They suggested that lack of credibility may affect the information obtained through e-learning tools as well as its certification in some communities and in the labor market. Finally, an important point related to global issues was that there was a significant lack of Arabic content on the internet.

### **6.6.3 Learners' suggestions to develop e-learning**

The results showed some learners' proposals to develop e-learning. These addressed previous negatives, themes of planning and cost being emphasized.

As a result of planning, financial, human and technical support should be provided. The private sector could support e-learning and in particular training and maintenance. Educators should be involved in the design of e-learning and there should be reduced profitability for some companies producing e-learning programs. Training should be intensified. Awareness of e-learning should be raised, including in the wider society.

Regarding costs of time and money, care should be taken to benefit from advanced countries in e-learning applications and to work on the transfer of successful experiences. Strong firewalls should be used to prevent viruses and other hazards that could delay studies and destroy results. An established criterion for the credibility of the information and the certification of sites as well as provisions to preserve copyrights are needed.

For users of e-learning, the harmful effects associated with e-learning should be addressed

## **Chapter Six: Conclusion and Recommendations**

and ways should be found to compensate for the social and human weaknesses of e-learning. A strong recommendation was for more Arabic content on the internet.

### **6.7 Recommendations**

Following are a number of recommendations which arose from reviewing the literature and from the data analysis of the present study.

#### **6.7.1 For the Universities**

As the findings have shown, universities should plan their innovations, particularly in vital areas such as ICT, with many considerations in mind. Although there are precedents in e-learning, each innovating institution should be aware, that successful experiences of other universities in other countries cannot necessarily transfer to their own location. Such differences as guiding philosophy, policy, strategies, issues and educational problems must be taken into account. Therefore, there must be strategic plans to introduce ICT, such as those mentioned by Khan (2005). Nevertheless, comprehensive planning does not only mean estimating the required number of computers, software and networks but should be further informed by teams of experts in e-learning and educational psychology, curriculum and teaching methods, design of software, production, information technology and communications. These experts could be drawn from representatives of the specialized companies working in the field of ICT and instructors, parents and the intellectuals in society. This team should conduct a planning process with a holistic view of e-learning by identifying its components and the relationship between these components.

In the planning process, the universities should give close attention to their infrastructure by modernizing and updating it, particularly the hardware and servers, choosing clear and easy to follow e-learning software and with minimal difficulty of site navigation to address

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learners' concerns about the confusion they experienced with finding information and navigating sites. Since unease about on-going costs emerged also from the findings, the universities should allocate sufficient resource to support the hardware and software and adding appropriate developments to their e-learning software and providing adequate and capable human resources as the need arises. For instance since weak protection and the presence of viruses were mentioned, while dealing with e-learning, the universities should provide strong firewalls for protection. Nevertheless, for continued technological development and to avoid hardship and excessive cost, the universities should not accept change for change's sake either in software or hardware, but they should make sure of the need for change and what it will entail, before carefully upgrading or accepting expansions to their systems.

Strong relations between universities and private organizations should be initiated at the planning stages and maintained. In fact, there is a demand for the gradual application of e-learning, so the universities' responses to this call for developing strategic plans should involve all professionals who move from the traditional to online learning. In short, the university could seek advice from specialists and consultants in this regard to set an appropriate strategic plan for e-learning and pay attention to continually updating hardware and software and taking full advantage of all e-learning features and characteristics. Coinciding with this, e-learning should be piloted before applying it to all, and appropriate guidelines should be established to support the adoption of standardized tools to determine readiness for this innovation in universities. In fact, there is a need for universities to keep reviewing their general plans for the application of e-learning through developing circumstances. As well as reviewing the current goals of e-learning, the plan should cover the on-going requirements of the change from traditional management to the digital management to improve human resources and achieve superior performance coupled with

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reducing management costs.

Indeed, other communication channels could be used to assist in e-learning. For instance reminders to visit the website by mobile phone may be faster and do not require constant internet access. It may be advisable to introduce regulations to facilitate the learners' partial visits to the web to ease their return to their full courses. Since the success of e-learning in arts is better than in scientific subjects, it may be useful to pay some extra attention to e-learning in science. Due to findings about the effect of e-learning experience and ICT skills in the dimension of autonomy, it is recommended that these two elements can be developed by more intensive training; which might be achieved best and least expensively by involving the private sector companies that produce educational programs.

The findings showed need for the training and preparation for all in the use of computerization and the internet. So universities should pay attention to the importance of training and encouraging ICT skills according to clear regulations for participation in e-learning. Courses to demonstrate how to use e-learning should aim at explaining its philosophy as well as giving enough time for learners to become familiar with procedures, not only in their current form but including the need to attend to the updates which will help maintain uninterrupted activities in e-learning. In response to different and conflicting information in e-learning, the device of making a research guide for specific locations and training e-learners in how to identify the credibility of web sites and other sources could also be considered as part of preliminary training. Universities should establish a site for academic counseling and for answering frequent questions for on-going needs. Training programs should be created with suitable schedules to increase and maintain computer skills. Internet services could be better used if strategies for conducting successful searches were taught, beginning with simple leaflets containing the latest developments then using

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mandatory intensive courses whether taught conventionally or through the internet for significant advances. Certain courses about computers need to be offered to staff and faculty members otherwise lack of enthusiasm may result from inadequate knowledge of hardware, software and the internet. To alert staff and faculty members to frequent technological advances, they should be enabled to attend seminars and conferences in the field of e-learning for professional development in this area. Awards for their efforts to keep up with technological developments could be introduced as an incentive. Universities can also establish Learning Resources Centers to design electronic curricula and provide support and advice in this area for faculty members. Such centers may involve educators in design and reduce expenditure on commercial programs.

These research centers would promote excellence in various areas of ICT. The leadership of such centers should be carefully selected so that management and qualified staff can help towards the success of e-learning in universities. The research centers would then help higher education officials to make decisions about useful steps in the direction of creating academic forums on the internet to strengthen the relationship between participants in dialogue and to present advice about using the internet and its search engines,

To avoid disenchantment with the technology, it is advisable to maintain a strong, fast, direct and constant link to a technical support team thus saving learners' repeated attempts to fix problems. Periodic preventive maintenance to avoid breakdowns and to upgrade the level of efficiency is recommended. The universities should provide hot lines for technical support to respond to inquiries regarding the use of e-learning, the internet and computers. This will minimize breakdowns, slowness and inaccessibility wherever the problem originates from university networks and not from the public networks or from learners.

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Not only should there be a focus on providing evaluation tools to increase the learners' independence and self-reliance but universities also have a role to play in addressing difficulties in terms of tackling plagiarism, another problem identified by the students. Institutions should identify strict criteria and develop sites that do not allow cutting and pasting. They can also promote programs that help to detect plagiarism and implement zero tolerance policies with appropriate penalties. In addition, built-in standards of academic integrity and copyright creation should be adopted.

As a wider set of inferences from this study it is also recommended that universities streamline the output of higher education in the ICT field to service their actual needs in the technological labor market. Then new faculty members could be appointed with some consideration of their ability to use computers and the internet for communication effectively. Recognition could also take the form of incentives for those who use e-learning more than others such as allocating some means of recognizing their use of e-learning's tools and designing websites to ease communication with their learners. Such recognition could be linked to faculty promotions or used to generate bonuses to supplement university salaries in recognition of ICT involvement.

Efforts to reduce instructors' workloads may enable them to respond quicker to the learners (one of their concerns) and, correspondingly, to familiarize learners with the importance of communication, educating them to know when to ask for help and clarifying the new roles of learners and instructors in e-learning environments. Communication incentives could be extended to learners, motivating them to use e-learning tools such as chat rooms and discussions, and developing the means to do collective homework and assignments collaboratively, thus preparing them to join the technological labor market.

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The universities should encourage systematic studies and research about e-learning and provide the facilities necessary for its success. In particular, they should conduct more specialized studies that reveal the effectiveness of e-learning programs and their impact on learners' capacity and thinking. Funds should be directed to this kind of study to ensure e-learning's effectiveness and to research elements such as design features and collect information about the educational content and management of software.

Universities and institutions of higher education should be encouraged to cooperate in the field of e-learning and participate in building educational content and making it available to learners. Efforts should also be made to raise the level of cooperation between universities and the private sector especially the private sectors producing educational programs.

Finally, as a solution to the students' suggestion that e-learning weakens social relationships and increases the isolation, one approach would be to provide support for learners to attend some centers according to their geographical regions as a part of their e-learning commitment to compensate for more individual approaches to studying.

Having examined what universities can do to strengthen the effectiveness of e-learning, findings relevant to the Ministry of Higher education will now be presented.

### **6.7.2 For Ministry of Higher Education**

As attention to the design of courses is so important, design criteria could be set by the Ministry of Higher Education. This will, in turn, develop and promote the quality of e-learning programs in order to establish and develop standards for e-learning software. The Ministry also has a role to play regarding both the weak credibility of information obtained

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through e-learning and the lack of credibility of e-learning certificates. It could seek means to equate e-learning certificates with other certificates, especially in the perceptions of the labor market. Through the Ministry of Higher Education, the government can recognize e-learning qualifications as the equivalent of traditional certificates.

### **6.7.3 For e-learning software producers**

To address the lack of appropriate design for some contents of e-learning, educational designers should pay more attention to meeting learners' requirements even though this may entail reducing the profit motive. It is suggested that proposals to find ways to compensate for the weaknesses in social development arising from e-learning, would include the utilization of social networks such as Second Life and others, and designing materials and examinations in two parts, theoretical and practical with an proportionate score allocated for each part. Cooperative social activities held through the internet would help to overcome isolation and the lack of social features in e-learning. Signals could appear on screen placing periods of time for rest to help the learner to avoid long continuous periods in front of the internet, which would also reduce the time spent in one sitting position, accompanying eye strain and dryness, and could introduce exercises for the eye, neck, shoulders and back. Periodic inclusion of any new inventions for comfort and health should be made such as more comfortable mouse, keyboard and screen designs and efforts should be made to ease the installation of these by reducing their prices. It may be a contribution to the maintenance of health to give opportunities to those who want to print content to read from paper rather than just reading through the screen thus accommodating the traditional enjoyment of reading from paper.

Some uncertainty was expressed about opportunities to identify talent through e-learning. The programmers and designers should include creative experiments and exercises in their

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courses to facilitate the discovery of original ideas. Regarding the limitation of a single version of the content for all, the producer could provide the content through multiple formats for different approaches to learning as well as giving the opportunity for learners to progress at various speeds, addressing some students concerns about pace. They should also increase the options to respond verbally to the network by not limiting input to use of the keyboard and the mouse. As some learners expressed boredom with the technology, it would be good to diversify the means of transmission, such as by using mobile phones and other inventions and designing the programs in multiple formats. The industry should also avoid using complex icons and procedures in their software and hardware. In view of the concern about producers of e-learning programs' financial priorities over and above their educational aims, the companies should be asked to engage educational designers to ensure courses are pedagogically appropriate.

Complaints of the harmful side effects of e-learning included physical, mental and social damage. So the mitigation or eradication of these side effects forms part of an effort to maintain appropriate health standards in which the producers can participate. Taking into account everything, such as the furniture used in workstation, its size, height and design as well as ensuring the right way to sit in front of the screen and the use of protection from the monitor's radiation, there is scope for innovative designs. Interpersonal interaction could be given further attention to create harmony and increase integration in all aspects of human and technological development. This could be achieved by adding some of the features and characteristics that help facilitate full autonomy and flexibility and adding incentives to increase interaction and communication which brings together two aspects of students' concerns.

Here the cultural difference concerning styles of learning in the Arab culture should be

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considered. It is well known that the pedagogy in many Arabic countries encourages to learning by listening and responding. This approach is often chosen as the best means of learning, compared to reading and writing in other cultures. It is seen as a favourable means of reception, over and above the extraction of a particular approach to learning from traditional classroom delivery. Therefore the recommendation to production companies is to incorporate it into their e-learning programs, with aural options for the delivery of information and interactive spoken responses.

### **6.7.4 For the government**

In the context of this study, a proposal can be made to the government's officials in cooperation with the Ministry of Communications and with King Abdulaziz City of Science and Technology to develop appropriate infrastructure to implement e-learning in the country in general. In addition, measures need to be taken to develop regulations and administrative procedures that facilitate the use of the internet in higher education.

The government's role could include an number of issues identified by students as disadvantages, such identification of inadequate sites, increasing the filter on such sites, limiting exposure to bad advertisements and providing web pages to promote ethical values. The government should work to build an information society through narrowing the digital gap by developing and applying information technology, through policies, and by the distribution of information and communication technologies in order to participate in global competition, and to achieve integration and balance between all sectors and state agencies in ICT. This reflects students' concerns about access to new technology. The aim should be to develop mechanisms, starting with the availability of ICT to all members of the community at an affordable cost and with clear regulations and policies. In addition to

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human resources development, this would provide e-services between segments of society at a reduced cost and high quality. Finally, as a wider inference, the need is to formulate a comprehensive national strategic plan to implement and establish e-learning in higher education in the Kingdom of Saudi Arabia through the E-learning National Centre. To do this it is necessary to assign appropriate budgets to build and develop e-learning software, including e-courses, support investment in the development of e-learning systems in accordance with contemporary trends and build a model of e-learning objects and e-repositories according to agreed scientific standards. Building a database of terms and different definitions in the field of e-learning is another urgent task.

### **6.7.5 For the whole society**

There are further wider implications which arise more broadly from the study. There is a need to raise awareness of e-learning to include the whole society by several means, such as conferences, symposiums and lectures, especially for decision-makers. There is a lack of clarity about e-learning and its role, and there are those who prefer traditional methods. Therefore, there is an urgent need to adopt an educational campaign to demonstrate the potential of e-learning. Some e-learners identify difficulties in information management, so they should be given courses in dealing with the information, how to employ it and to how to maximize their benefit from it. As well as group sessions, each learner should take the responsibility for personal preparation for e-learning. This could include addressing the fear of wasting time using e-learning and the internet, as found in this study, by allowing time to identify their objectives and tasks before starting their research. Members of the wider society should attend conferences, symposiums and lectures to gain information about e-learning. Therefore the issue of lack of Arabic content on the internet, again as identified in this study, compared to other languages, should be taken as an urgent priority. To address this additional Arabic websites could be launched and there should be translation projects

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for existing websites. In fact, to bridge this gap a comprehensive project could be set up to increase the Arabic content by encouraging translation. This might be started by some learners doing the translations and also by creating Arabic websites from assignments or graduation projects. Work on the production of Arabic databases to meet the needs of the Arabic users should be done to overcome the language barrier. Sessions of intensive training could be offered to give learners research skills in English since most of the research is published in English. Faculty members could be required to take English courses so that they are qualified to redress this lack of Arabic content

### **6.7.6 For the global cooperation**

The international aim would be to encourage partnerships with the world to benefit from international experience with regard to planning, design, management and implementation in the field of e-learning. Further advances could be secured by building a common database to explain e-learning and its environments and providing the latest developments in the area. Progress could be fostered by holding the memorandum of cooperation, understanding and partnership between institutions of higher education in Saudi Arabia and between the universities of developed countries to bridge the gap in this area and transfer the successful experiences across boundaries.

### **6.8 The contribution**

This study provides three main contributions to knowledge in the following areas:

First, this research provides, in context, details of the literature about e-learning, where it tried to identify the idea and the definition of e-learning and its relationship with distance learning. The intention of the study was to contribute to a better understanding of e-learning from learners' perspectives and evaluate its effectiveness in such a way that its positives, negatives, barriers, requirements, and the proposals for e-learning's development

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may be raised in a way which will help to develop e-learning. All of this was obtained from the most important beneficiaries of e-learning, the learners.

Second, this research provides a framework for evaluating the effectiveness of e-learning through the learners' perceptions, benefiting from all the earlier models in the literature and applying their insights appropriately to the environment of Saudi Arabia, in particular Saudi higher education, and focusing on the flexibility that is available through the ability to learn autonomously and interactively between the learners and the content, their instructors and amongst themselves. The research concludes by providing a reliable systematic survey to measure the effectiveness of e-learning from learners' perspectives, which will give practitioners detailed information about the effectiveness of e-learning from as perceived by students.

Thirdly, the study will contribute to bridging a gap in the literature by evaluating the effectiveness of e-learning in higher education in Saudi Arabia, being one of the first studies in the Arab world in this area to focus on learner perceptions. Therefore this new model of evaluation may be used as a foundation for future evaluations of the effectiveness of e-learning and may open the door for similar studies contributing to the comprehensive evaluation of e-learning and providing answers to the concerns of officials and educators about its strengths and weaknesses, thus helping towards decision-making on e-learning.

### **6.9 Limitations of the study**

Despite several strengths in this study (such as the sampling from two universities, with a high response rate of 73%, and a methodology which included a mixed method approach to triangulate students' perceptions as expressed through questionnaire and interviews) there are some limitations that must be acknowledged.

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Whilst this study has attempted to limit the subjectivity and challenges typical to social studies, some specific limitations were unavoidable, such as some inherent in the tools and in data collection or in the methodology. The study relies on the reported perceptions of the students involved. Whilst there was a high degree of coherence and correspondence in what they reported, this limits the inferences which are reasonable to make from the study findings. In addition there could be some weaknesses in the analysis and presentation of the data. In particular it is hard to evaluate the relative importance of the quantitative findings and the qualitative responses in terms of overall importance to the students studied. Similarly, the fine distinction between such notions as barriers and negatives of e-learning and the complex reversals of requirements and barriers led participants to express closely related views in different phases of their participation.

Other weaknesses were the limitation of the study population to male students and the examination of the learners' perceptions only. In the implementation process, there was some delay in getting the required permission, particularly, for cultural reasons, to conduct the focus group interviews. The intervention was only for three months and the researcher faced some difficulties in designing the study tools to cover the information needed to evaluate the effectiveness of e-learning in a way that was appropriate to the Saudi environment. Also, like any study of this complexity dealing with humans and technology, there were limitations in interpreting the results. For example, the research design may overlook differences attributable to the gender and place or environment and to the degree of knowledge a learner has of a second language. Another factor may be the impact of the number of e-courses a learner has previously taken, but this study did not include these variables. In addition, there were some inconsistencies between the responses of learners to the various research instruments addressing the dimensions as shown by differences in questionnaire responses, open-ended comments and the focus group interview. Although

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some explanations are offered by the researcher, as reported (p. 235), it remains that these discrepancies may have not been identified or explained systematically.

Although there have been efforts to explain the terminology and definitions, there is still a lack of agreement among researchers and there are some overlaps that often cause confusion between the definitions of terms of study such as e-learning, flexibility and interactivity. This may lead to different findings and interpretations in other similar studies.

The environment of the study was confined. This research is limited to the two universities and, as a geographical fact, the study was limited to Riyadh province area which is only one of the thirteen provinces in KSA. Furthermore, because Riyadh province is the capital, it may show results that are different when applied to other provinces due to the accessibility of supplies. Nevertheless, focusing on these two universities can be justified for two main reasons. First they were the earliest universities to be established so they were considered the mother of the all Saudi universities, and, secondly, they also seem to have been the first Saudi universities introduce the technology and to make e-learning available to a large sample of learners. Because other universities differ in their applications of e-learning, there may be different results when the same research methods are applied to the other universities in KSA.

Another constraint on this research was the limited time and resources available to the researcher. This study was conducted in a particular location and time which was the second semester in 2008 and the results were related to that particular time and location so the generalizations from the findings to other contexts is subject to debate. Amongst due considerations would be the differences in the software and hardware and the features available for e-learning at the time of conducting the study. "Learners' perceptions of e-

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learning” means, of course, their perceptions at the time of the study and within the limitations of identifying their perceptions. It cannot therefore be seen as representing all current or future approaches to e-learning; significantly, because “e-learning” implies the use of computers, their applications, software and networks for learning and these are subject to rapid change. Remembering that the software and hardware change rapidly suggests that whatever the learners see it as negative may be resolved by a new product or by the same product in a further development. These changes to the capabilities of hardware, software and the internet, also affect the comparability of different studies done before or after development even if they use the same questions. In other words, the validity of these results is confined to the two universities and this study should not be generalized to others unless the results are reinterpreted in light of the limitations appropriate to the new situation.

Additionally, this result might be affected by a number of reasons extraneous to the study. These include the impact of novelty which generates eagerness and enthusiasm in learners because they are working on something different and not necessarily benefiting from the particular pedagogical method (Clark and Sugrue, 1991; Adair, 1984; Saretsky, 1975). This is a limitation on the generalization of the results. Furthermore, technology is often linked with entertainment and games, which could influence students’ underlying perceptions and therefore the results. Indeed, some learners use technology just to show that they are modern or up-to-date, which might influence their view of technology regarding their learning.

Having considered the limitations of this study, its implications for further research will now be considered.

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### 6.10 Further study

In light of the limitations of this study and other issues arising in this research and in the literature, some possibilities for further study are mentioned below.

Other studies of the same type may allow scope to verify and generalize results. As this study focused on male learners, a study about female learners may examine the effectiveness of e-learning from their point of view. Since the sample for this study was selected from the learners and did not include instructors and administrators, a study on them may include examining the effectiveness of e-learning from their point of view. Because this study, as mentioned above, was limited to learners in two universities in the second semester of 2008 and because the experience of e-learning was, to some extent new there, it would be useful to conduct the research again to compare the results and assess the extent of changes caused by the continuing use of e-learning in higher education. Whilst this study was conducted in Riyadh, Saudi Arabia and the sample was drawn from the two universities, it is recommended that this study is repeated at other universities in Saudi Arabia.

The theoretical sections of this study refer to difficulties the researcher encountered with some of the definitions and meanings surrounding the effectiveness of e-learning. The terminology used for these studies requires analysis and part of addressing such controversies is to develop a common measurement for the effectiveness of e-learning. Also in the literature, studies about acquiring and maintaining the knowledge and the skills in e-learning, are extremely rare so some studies on this aspect are advised. Some in depth study is also needed to understand how knowledge is retained during and after e-learning and an analysis of the role of instructors in e-learning could be conducted.

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Comparative studies can also be applied to e-learning. Due to the different use of e-learning in the universities, assisted, blended or totally online, one suggestion would be to conduct a study to find out which type of e-learning is most helpful. Comparative studies could also be made between Saudi universities themselves and between them and others around the world into the uses they make of e-learning. Because there are few studies of the effectiveness e-learning, the researcher recommends that similar studies should be done to evaluate the experiences of other Saudi universities in the use of e-learning so that results can be compared and a general outcome can be reached about the effectiveness of e-learning. This study focuses on higher education so it would be interesting to conduct further studies at Saudi community colleges and in the vocational sector, industry and business to see if their learners express the same perceptions of e-learning's effectiveness and why.

Pedagogical analyses would include studies of e-learning materials and curricula to find out the extent of adaptations to the instructional potential of e-learning. Experts in the field could attempt a developmental study in the use of e-learning to propose a standardized model for its use in all institutions of higher education.

Technological inquiries could consider the reasons for the slowness of the internet in view of the repeated complaints and could determine whether it is due to the university's networks or to the public's networks as a whole. A study of usability in e-learning is also recommended.

Helpful studies into the impact of variables on e-learning might include studying such issues as gender and ability to speak more than one language. This study showed significant differences based on some variables and but did not examine in depth the

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reasons for such outcomes, so such a study is indicated.

Experimental studies could be set up to identify the differences between e-learning and traditional methods of delivery and to find out whether there are other factors influencing the effectiveness and application of e-learning. Given that e-learning has a great impact on the economy, the question is still posed: “what is its impact on the learners’ mind, motivation, psycho-social potential and physical?” Despite the excitement and fun which e-learning may offer, the final outcome is still questionable. Studies of these aspects are required to find the long term and short term effects of technological use, both negative and positive.

Questions raised for this study have shown that an additional dimension is required to Khan’s (2005) e-learning dimensions, called “health”, designed to include two sub-dimensions; the psychological and the physical. Although Khan’s dimensions mentioned social isolation and other tensions, he did not give these factors a central position in his typology. Nevertheless, this dimension deserves independent focus. Psychological and emotional health can be impaired by boredom as well as the alienation suffered by isolated learners that can result in such conditions as obsessive compulsive disorders or even agoraphobia (O'Regan, 2003). Care of physical health such as eyestrain, headache and neck/back pain are also necessary. Factors such as the height and the location of the chair and screen and the distance between the eye, the keyboard, mouse and the screen and the location of the hands on the keyboard and mouse are important. Significant, also, is the length of time recommended for each sitting at the computer, and advice about some exercises to eliminate repetitive strain injury and other dysfunctions due to technical operations and for the alleviation of symptoms and illnesses associated with computer use

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(Yan et al. 2008). Indeed, academic studies of these health issues, especially those that are associated with internet use, are needed.

The foregoing consideration of the potential field of study of e-learning has made suggestions about replicating the present study as well as doing comparative research into other aspects and other areas of e-learning. It has noted the need for theoretical and practical research into the issues surrounding e-learning and has suggested the need to study technological capabilities as well as human variables that may affect the rapidity and maintenance of knowledge mastery through e-learning. Whilst the present study has demonstrated the usefulness of the mixed method that was adopted for it, some scope has been shown for experimental research in the field of e-learning particularly to validate learners' perceptions.

The results of this study clearly demonstrate the effectiveness of e-learning from learners' point of view. In flexibility, learners can learn autonomously at any time, any place, at any pace. In interactivity, learners interact positively with the content, instructors and with other learners. In terms of positives and negatives, there is use and encouragement in e-learning and the drawbacks can be avoided or remedied, the requirements can be achieved and obstacles can be overcome especially according to the learners' suggestions. There is no doubt that the systematic evidence about e-learning's effectiveness will help to reduce controversy about its implementation.

This concludes the current evaluation of e-learning from the perspective of male students at two universities in the capital city of Saudi Arabia. The implications of the study for educational and technological change within higher education in KSA have been discussed from the point of view of related literature, mixed methods research, and future possibilities for related research. The hope has been expressed that this study will be of use to the wider

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academic community both in Saudi and across the world. It may be that some features of the Saudi Arabian approach to higher education will be of use to other countries seeking to develop the full potential of their learners and a case has been made for the development of Arabic resources on the internet to enhance the exchange of knowledge both within and beyond the country of origin of this study.

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**APPENDICES**

**Appendix A. Cover Letter for the Questionnaire (English)**

Dear Student,

The researcher is conducting a study entitled "Evaluation of the effectiveness of e-learning experience in some of the Saudi Universities from male students' perception" in order to complete the requirements for obtaining a PhD in Information and Communication Technology in Education in e-learning from the University of Durham in the UK. E-learning -in this research- means the use by university students of any of the e-learning software which was recently introduced by the university, namely Jusuer or Tadars, which include content, activities, tasks and assessments, and means of interaction (synchronous and asynchronous ) with the content and instructor and your fellow students. The aim of this study was to evaluate the effectiveness of e-learning through four dimensions: the ability to learn autonomously through e-learning, and the interactions with content and instructors and colleagues.

Because of the importance of your point of view, as the most important stakeholder, it will be used to evaluate the effectiveness of e-learning. The researcher has prepared a questionnaire; which includes the four dimensions required to answer the research questions and hopes you will, kindly, fill in the questionnaire by reading it carefully, and then ticking (√) below the option which is compatible with your point of view, on the five point Likert scale: strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

All data will be used only for research purposes. As there are no questions to identify the participants strict confidentiality is ensured. I would also like to draw it to your attention that your participation in this survey is voluntary and you are free to withdraw at any point. It will not take more than 15 minutes, but it will benefit the researcher and the community through contributing in the evaluation of the effectiveness of e-learning in Saudi universities, indeed, your feedback is essential to improving e-learning in the future.

Thank you very much for your support and your cooperation, and for further queries about the questionnaire please email correspondence to the following address:

[a.f.algahtani@durahm.ac.uk](mailto:a.f.algahtani@durahm.ac.uk)

Abdullah Algahtani

**Appendix B. The Questionnaire (English)**  
**Questionnaire**

Please mark (√) in the right place:

**Background**

specialization	Have you learned by E- learning before?	Age	ICT'S Skills
<input type="checkbox"/> Art <input type="checkbox"/> Science	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> 22& Less <input type="checkbox"/> 23-25 <input type="checkbox"/> 26&Above	<input type="checkbox"/> Beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> Skilled

**Dimension 1: the ability to learn autonomously in e-learning**

	Items	S.A (5)	A (4)	N (3)	D (2)	S.D (1)
1	In e-learning my learning is personalized.					
2	In e-learning I can learn anytime, anywhere.					
3	In e-learning I can learn based on my pace.					
4	E learning presents what is suitable for my learning style					
5	E-learning enables me to review the foregoing any time.					
6	E-learning presents immediate feedback.					
7	In e-learning I am able to self-evaluate.					
8	E-learning presents suitable technical support					

**Dimension 2: learner- content- interaction in e-learning**

	Items	S.A (5)	A (4)	N (3)	D (2)	S.D (1)
9	E-learning eases the process of learning.					
10	E-learning encourages me to learn more.					
11	E-learning increases my capacity.					
12	E-learning increases the motivation to learn.					
13	E-learning increased my productivity.					
14	E-learning helped me to manage my time and self discipline.					
15	My specific learning time in e-learning was spent fully in learning					
16	I prefer to do the tasks and tests through e-learning tools.					
17	I prefer to obtain my score through e-learning tools.					
18	My results in e-learning were better compared to those I received in traditional learning					
19	E-learning met my needs.					
20	E-learning met my expectations.					
21	I enjoyed learning by e-learning.					
22	I felt more freedom learning by e-learning.					
23	E-learning has increased my confidence.					
24	I want to take other courses by e-learning					

**Dimension 3: learner-instructor- interaction in e-learning**

	Items	S.A (5)	A (4)	N (3)	D (2)	S.D (1)
25	I prefer communication with the instructor by e learning compared to face to face.					
26	E-learning has increased communication with the instructor.					
27	I built a productive relationship with the instructor via e-learning.					
28	E-learning eased discussion with my instructor.					
29	E-learning encouraged me to discuss with my instructor.					
30	I enjoyed contacting my instructor via e-learning.					
31	In e learning I received more attention from my instructor					

**Dimension 4: learner-learner- interaction in e-learning**

	Items	S.A (5)	A (4)	N (3)	D (2)	S.D (1)
32	I prefer to communicate with my classmates by e learning compared to face to face.					
33	E-learning has increased my communication with other learners.					
34	I built a productive relationship with other learners via e-learning.					
35	E-learning eased discussion with my classmates.					
36	E-learning encouraged me to participate in discussion with my classmates.					
37	I enjoyed contacting my classmates via e-learning.					
38	E-learning has increased cooperation among learners.					

Do you want to add anything that was not mentioned in the Questionnaire?

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 -----  
 -----  
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I will, interview some of you to identify, more closely, your points of view about the effectiveness of e-learning.

If you have the desire to participate in this interview I kindly request you fill in your name and contact address below.

I want to participate.

Name:

Mobile:

E-mail:

**Appendix C. Cover Letter for the Questionnaire (Arabic)**

وفقه الله

أخي الطالب الكريم /

السلام عليكم ورحمة الله وبركاته وبعد :-

يقوم الباحث بدراسة بعنوان "تقييم فاعلية تجربة التعلم الإلكتروني في بعض الجامعات السعودية من وجهة نظر الطلاب" وذلك استكمالاً لمتطلبات الحصول على درجة الدكتوراة في تقنية المعلومات والاتصالات في التعليم (التعلم الإلكتروني) من جامعة درم في بريطانيا .

ويقصد بالتعلم الإلكتروني (في هذا البحث) استخداماتك - كأحد طلاب الجامعة- لبرامج التعلم الإلكتروني والتي طبقت مؤخراً من قبل الجامعة ، كبرنامج جسور أو تدارس أو غيرهما ، بما تشمله من محتوى ، وأنشطة ، ومهام واختبارات ، ووسائل تفاعل (تزامنية ولاتزامنية) مع المحتوى و الإستاذ وزملائك الطلاب .

كما تهدف هذه الدراسة إلى تقييم الفاعلية من خلال المحاور التالية "القدرة على الاستقلالية في التعلم الإلكتروني ، والتفاعل مع المحتوى و الإستاذ و الزملاء .

ولأهمية وجهة نظركم - كأهم المستفيدين - في تقييم فاعلية التعلم الإلكتروني، فإن الباحث قد قام بإعداد هذه الاستبانة؛ والتي تتضمن أربع محاور يتطلب الإجابة عليها جميعاً ،أمل التفضل بتعبئة الاستبانة من خلال قراءة عباراتها قراءة متأنية، ومن ثم وضع علامة (√) امام الخيار الذي يتوافق مع وجهة نظركم ،من خلال المدرج الخماسي التي يتعلق بمدى الموافقة على كل فقرة (موافق تماماً(٥)، موافق(٤) ، محايد (٣)، غير موافق(٢)، غير موافق تماماً(١))

إن جميع البيانات لن تستخدم إلا لأغراض البحث العلمي فقط ،كما أنه لا توجد أسئلة تحدد هويتكم، واجابتم ستعامل بسريّة تامه. كما أود ان الفت انتباهكم الى ان مشاركتكم في هذا المسح تطوعية ولكم حرية عدم اكمال البحث في اي نقطة، علماً أنه لن يستغرق أكثر من ١٥ دقيقة، ولكنه سيفيد الباحث والمجتمع من خلال المشاركة في تقييم فاعلية التعلم الإلكتروني في الجامعات السعودية.

شاكر لكم حسن تعاونكم ،ومقدرا لكم تكرمكم بالإجابة، سائلاً الله تعالى أن يكتب لكم الأجر، والله يحفظكم ويرعاكم ،،

أخوكم الباحث

عبدالله القحطاني

[a.f.algahtani@durahm.ac.uk](mailto:a.f.algahtani@durahm.ac.uk)

**Appendix D. The Questionnaire (Arabic)****الاستبانة**

يرجى وضع العلامة ( √ ) في المكان المناسب:

**المعلومات الأساسية :-**

التخصص	هل سبق لك أن درست بالتعلم الإلكتروني؟	العمر	المهارات التقنية
( ) نظري	( ) لا	( ) ٢٢ و اقل	( ) مبتدئ
( ) علمي	( ) نعم	( ) ٢٣-٢٥	( ) متوسط
		( ) ٢٦ و اعلى	( ) متمكن

**المحور الأول: القدرة على التعلم باستقلالية في التعلم الإلكتروني :**

م	العبرة	موافق تماما (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماما (١)
١	في التعلم الإلكتروني تعلمي ذاتيا.					
٢	يمكنني التعلم في أي وقت وفي أي مكان من خلال التعلم الإلكتروني.					
٣	استطيع التعلم وفق قدراتي من خلال التعلم الإلكتروني.					
٤	يقدم التعلم الإلكتروني مايناسب طريقة تعلمي .					
٥	يتيح التعلم الإلكتروني مراجعة ماسبق دراسته .					
٦	يقدم التعلم الإلكتروني التغذية الراجعة المباشرة.					
٧	يمكنني التعلم الإلكتروني من تقويم ذاتي.					
٨	يقدم التعلم الإلكتروني الدعم الفني المناسب .					

**المحور الثاني: التفاعل مع المحتوى في التعلم الإلكتروني:-**

م	العبرة	موافق تماما (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماما (١)
٩	يسهل التعلم الإلكتروني عملية التعلم .					
١٠	يشجعني التعلم الإلكتروني على مزيد من التعلم.					
١١	يزيد التعلم الإلكتروني من استيعابي .					
١٢	يزيد التعلم الإلكتروني من الدافعية للتعلم.					
١٣	يزيد التعلم الإلكتروني إنتاجيتي .					
١٤	يساعدني التعلم الإلكتروني على الانضباط وإدارة الوقت .					
١٥	وقتي في التعلم الإلكتروني يصرف بكامله في التعلم .					
١٦	أفضل أداء المهام والاختبارات من خلال أدوات التعلم الإلكتروني.					
١٧	أفضل الحصول على درجاتي من خلال أدوات التعلم الإلكتروني.					
١٨	درجاتي أعلى بالتعلم الإلكتروني مقارنة بالتعلم التقليدي					
١٩	يحقق التعلم الإلكتروني احتياجاتي التعليمية.					
٢٠	يحقق التعلم الإلكتروني توقعاتي التعليمية.					
٢١	أشعر بالمتعة عند التعلم بالتعلم الإلكتروني.					
٢٢	أشعر بحرية أكثر عند التعلم بالتعلم الإلكتروني.					

٢٣	يزيد التعلم الإلكتروني من ثقتي بنفسي.				
٢٤	أرغب تسجيل مواد أخرى بطريقة التعلم الإلكتروني				

### المحور الثالث: التفاعل مع الأستاذ في التعلم الإلكتروني:-

م	العبرة	موافق تماما (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماما (١)
٢٥	أفضل التواصل مع الأستاذ بالتعلم الإلكتروني مقارنة مع وجهها لوجه .					
٢٦	يزيد التعلم الإلكتروني التواصل مع الأستاذ .					
٢٧	أستطيع بناء علاقة منتجة مع الاستاذ عبر التعلم الإلكتروني.					
٢٨	يسهل التعلم الإلكتروني النقاش مع الاستاذ.					
٢٩	يشجع التعلم الإلكتروني على مناقشة الأستاذ.					
٣٠	استمتع بالاتصال بالأستاذ عبر التعلم الإلكتروني.					
٣١	أتلقي اهتماما أكثر من الأستاذ من خلال التعلم الإلكتروني.					

### المحور الرابع: التفاعل مع الزملاء في التعلم الإلكتروني :-

م	العبرة	موافق تماما (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماما (١)
٣٢	أفضل التواصل مع زملائي بالتعلم الإلكتروني مقارنة مع وجهها لوجه .					
٣٣	يزيد التعلم الإلكتروني التواصل مع زملائي.					
٣٤	استطيع بناء علاقة منتجة مع زملائي عبر التعلم الإلكتروني.					
٣٥	يسهل التعلم الإلكتروني النقاش مع زملائي.					
٣٦	يشجع التعلم الإلكتروني على المشاركة في النقاش مع زملائي.					
٣٧	استمتع بالاتصال بزملائي عبر التعلم الإلكتروني.					
٣٨	يزيد التعلم الإلكتروني من التعاون بين الطلاب.					

### ماتود إضافته ولم يذكر في الاستبانة

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سوف أقوم بإذن الله تعالى بإجراء عدد من المقابلات الجماعية للتعرف على وجهة نظر الطلاب عن كُتب حول فاعلية التعلم الإلكتروني.

إذا كان لديكم الرغبة في المشاركة في هذه المقابلة أرجو التكرم بالإشارة في المكان المخصص مع ذكر الاسم وعنوان الاتصال.

ارغب في المشاركة.

الجوال:

الاسم:

البريد الإلكتروني:

**Appendix E. The Focus Group Interview Questions (English)****focus group Interview questions**

	<b>Questions</b>
	<b>Main questions</b>
1	What are your perceptions of e-learning's positives and negatives
2	What are your perceptions of barriers facing e-learning and its requirements and your suggestions for the improvement of e-learning
	<b>secondary questions</b>
1	Are you able to learn by yourself through e- learning at any time, anywhere and at any pace?
2	What are your expectations of and needs for e-learning?
3	How would you compare traditional and e-learning?
4	Do you feel that the e-learning content was higher or lower than your usual level or just the same?
5	What did you feel about e-assessment and the "questions' bank" on the site?
6	Describe your dealings with your lecturer and colleagues on-line and face to face and why did you prefer a certain type of interaction?

**Appendix F. The Focus Group Interview Questions (Arabic)****اسئلة المقابلة الجماعية**

م	السؤال
	الاسئلة الرئيسية
١	ماهي ايجابيات وسلبيات التعلم الالكتروني من وجهة نظرك ؟
٢	ماهي العقبات والمتطلبات والمقترحات لتطوير التعلم الالكتروني من وجهة نظرك؟
	الاسئلة الثانوية
١	هل أنت خلال التعلم الالكتروني قادر على التعلم باستقلالية (في أي زمان وفي أي مكان وبأي سرعة)
٢	ماهي احتياجاتك في التعلم الالكتروني وماهي توقعاتك
٣	قارن بين التعلم تقليديا والتعلم الكترونيا
٤	هل تشعر أن محتويات التعلم الالكتروني أعلى أو أقل أو مناسبة لمستواك العلمي المعتاد
٥	ماهو شعورك تجاه التقييم الالكتروني وبنوك الاسئلة في الموقع
٦	صف تعاملك مع المحاضر والزملاء من خلال التعلم الالكتروني ووجه لوجه. واي الطريقتين تفضل؟ ولماذا؟

**Appendix G. Letter from the Supervisor to the Saudi Culture Bureau in UK  
Confirming the Undertaking of the Field Study**



School of Education

Shaped by the past, creating the future

Email: S.E.Higgins@durham.ac.uk  
Direct Dial-in: (+44/0) 191 334 8324

Secretary:  
Email: Anita.Shepherd@durham.ac.uk  
Direct Dial-in: (+44/0) 191 334 8401  
Fax: (+44/0) 191 334 8311

13th August 2008

Saudi Arabia Cultural Bureau  
29 Belgrave Square  
London  
SW1X 8QB

Dear Sir/Madam,

**Re: Mr. Abdullah Algahtani**

I am writing to confirm that Mr. Abdullah Algahtani will be undertaking field study for three months starting on the 1<sup>st</sup> October 2008 and needs to visit Saudi Arabia to collect the required data in order to be able to pursue his research.

Mr. Algahtani is researching, "Evaluation of e-learning experience in some of the higher education institutions in the Kingdom of Saudi Arabia from the students' points of view".

I approve these arrangements and consider they are critical to his research activity.

Yours faithfully,

A handwritten signature in black ink that reads "S. E. Higgins".

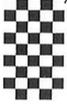
Professor S. E. Higgins  
Postgraduate Divisional Director/  
Supervisor



Leazes Road Durham DH1 1TA  
Telephone +44 (0) 191 334 2000 Fax +44 (0) 191 334 8311

Queen's Campus Stockton University Boulevard Thornaby Stockton on Tees TS17 6BH  
Telephone +44 (0) 191 334 2000 Fax +44 (0) 191 334 0006  
[www.durham.ac.uk/education](http://www.durham.ac.uk/education)

**Appendix H Letter from the Saudi Cultural Bureau in the Uk to the Ministry of Education in Saudi Requesting Approval for the Field Trip**



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SAUDI CULTURAL

00442072459895

001/001

2/12/14  
@ 14/12/14

رسالة هاتفية عاجلة

الأكاديمية

رقم ملف الطالب: ME131

المحترم

سعادة وكيل الوزارة للتعليم بوزارة التربية والتعليم

السلام عليكم ورحمة الله وبركاته، وبعد،

تجدون برفقه صورة من خطاب منسوبكم/ عبد الله بن فالح القحطاني والمبتعث لدرجة الدكتوراه من جامعة درم بشأن الموافقة على القيام برحلة علمية لجمع المادة العلمية لبحثه وذلك لمدة ثلاثة أشهر اعتباراً من ١/١٠/٢٠٠٨م، كما نرفق خطاب مشرف المبتعث بالجامعة يوصي له بالقيام بالرحلة، علماً بأنه تم إخطار جميع المبتعثين بضرورة الرفع بطلباتهم قبل وقت كافٍ لكي يتمكن مرجعهم من دراسة طلباتهم والرد عليها.

نأمل اطلاع سعادتكم وإفادتنا بمرثياتكم حيال طلبه، كما نأمل الإشارة لرقم ملف الطالب أعلاه في جميع المراسلات الخاصة به.

وتقبلوا وافر التحيات ،،،



الأكاديمية

القيد



**Appendix I. Letter from the Ministry of Education to Ministry of Civil Services  
Requesting Approval for the Field Trip**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

  
وزارة التربية والتعليم  
MINISTRY OF EDUCATION

المملكة العربية السعودية  
وزارة التربية والتعليم  
وكالة الوزارة للتعليم  
الإدارة العامة للتدريب والابتعاث

الرقم: ٨٧ / ٤٤٤  
التاريخ: ٩ / ٩ / ١٤٢٩  
المشرفات: 

الموضوع/ بشأن طلب رحلة علمية للمبتعث / عبد الله بن  
فالح القحطاني .

**سعادة مدير عام التدريب والابتعاث**  
**بوزارة الخدمة المدنية**

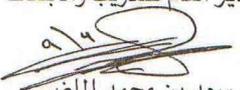
وفقه الله

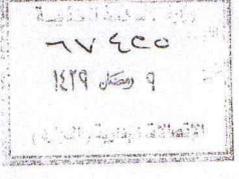
السلام عليكم ورحمة الله وبركاته ... وبعد .

نرفق لسعادتكم الرسالة الهاتفية الواردة من الملحق الثقافي السعودي في بريطانيا رقم  
٤/١٣٣٨٤ وتاريخ ٢١/٨/١٤٢٩ هـ مع كامل مرفقاتها بشأن طلب مبعوث هذه الوزارة  
للدراية/عبد الله بن فالح القحطاني القيام برحلة علمية للمملكة لجمع المادة العلمية المتعلقة  
ببحثه في مجال تقنية المعلومات والاتصالات (التعلم الإلكتروني) وذلك لمدة ثلاثة أشهر اعتباراً  
من ١/١٠/٢٠٠٨ م .

نأمل التكرم بعرض الموضوع على لجنة تدريب وابتعاث موظفي الخدمة المدنية وإشعارنا بما  
يتقرر .

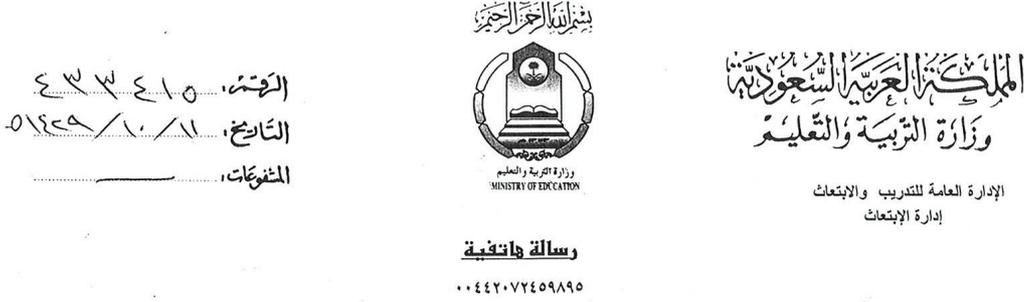
ولكم خالص تحياتي . 

المدير العام للتدريب والابتعاث  
  
د. سعد بن محمد الماضي

  
٦٠٠  
٦٧٤٤٥  
٩ رمضان ١٤٢٩  
الإدارة العامة للتدريب والابتعاث

هاتف : ٤٠٤٢٨٨٨ - ٤٠٤٦٦٦٦ - فاكس : ٤٠٣٧٢٢٩ - ٤٠١٢٣٦٥ - العنوان البريدي : الرياض - وزارة التربية والتعليم ١١١٤٨

**Appendix J. Approval letter From the Ministry of Education to the Saudi Cultural Bureau in the UK for the Field Trip**



**المحترم**

**سعادة الملحق الثقافي السعودي في بريطانيا**

السلام عليكم ورحمة الله وبركاته

إشارة إلى رسالتكم الهاتفية رقم ٣٣٨٤ وتاريخ ١٤٢٩/٨/٢١٢٧هـ بشأن طلب مبعوث هذه الوزارة للدراسة/ عبدالله فالح القحطاني القيام برحلة علمية للمملكة لجمع المادة العلمية لإتمام بعثته الدراسية لمرحلة الدكتوراه في مجال " التعلم الإلكتروني " لمدة ثلاثة أشهر اعتباراً من ١٤٢٩/١٠/٠١هـ الى ١٤٢٩/١٢/٣٠هـ .

نفيدكم إننا تلقينا خطاب أمين عام لجنة تدريب وابتعاث موظفي وزارة الخدمة المدنية رقم ٣٨٧٨١ وتاريخ ١٤٢٩/٩/٢٢هـ المرفق به قرار اللجنة رقم ٩٢٤ في ١٤٢٩/٩/٢٢هـ المتضمن الإفادة بموافقة اللجنة على قيام المذكور بالرحلة العلمية المطلوبة لمدة ثلاثة أشهر اعتباراً من ١٤٢٩/١٠/٠١هـ الى ١٤٢٩/١٢/٣٠هـ .  
ليتمكن من جمع المعلومات اللازمة لبحثه .  
أمل الإطلاع وإكمال اللازم .

ولكم خالص تحياتي،،،

المدير العام للتدريب والابتعاث

د . سعد بن محمد الماضي



**Appendix L. Letter From the Ministry of Education to Imam University Requesting  
Consent to Carry out the Field Study**

الرقم: ٥١٥٣٥٨  
التاريخ: ٩ - ٩ - ٢٠١٩  
المشرفات: يدون

الموضوع بشأن / تسهيل مهمة باحث .



الملك عبدالعزيز آل سعود  
وزارة التربية والتعليم

وكالة الوزارة للتعليم

الإدارة العامة للتدريب والابتعاث

إدارة الابتعاث

سعادة عميد كلية الدراسات العليا والبحث العلمي بجامعة الإمام محمد بن سعود الإسلامية  
وفقه الله

السلام عليكم ورحمة الله وبركاته ... وبعد .

يقوم الباحث / عبد الله بن فالح القحطاني المبتعث للحصول على درجة الدكتوراه في تقنية  
المعلومات والاتصالات (التعلم الإلكتروني) في جامعة درم ببريطانيا بإعداد بحثه بعنوان "تقييم  
فاعلية تجربة التعلم الإلكتروني في بعض الجامعات السعودية من وجهة نظر الطلاب"  
ويحتاج إلى القيام بتطبيق هذه الدراسة على طلاب جامعتكم .  
أمل التكرم بالموافقة والإيعاز للمعنيين لديكم بتسهيل مهمته حيال تطبيق الاستبانة وإجراء  
المقابلات الخاصة ببحثه .

والله يحفظكم ويرعاكم .  
الحمد لله

مدير عام التدريب والابتعاث

د. سعد بن محمد الماضي

د. محمد بن فهد العبد  
د. محمد بن فهد العبد  
٩١٤٤

د. خالد فوزيتاني  
د. خالد فوزيتاني  
١٠١٤

**Appendix M. Confirmation Letter from the Ministry of Education to the Saudi Cultural Bureau in the UK at the End of the Field Study**

الرقم: ٥٥١٨٤٧  
التاريخ: ٣٠/١٢/١٤٤٩  
المنشآت: س



المملكة العربية السعودية  
وزارة التربية والتعليم

الإدارة العامة للتدريب والابتعاث

إدارة الابتعاث

حفظه الله

سعادة المحقق الثقافي السعودي في بريطانيا

السلام عليكم ورحمة الله وبركاته وبعد:

نفيدكم بأن الطالب/عبدالله بن فالح القحطاني (ME 131) مبتعثي هذه الوزارة لنيل درجة الدكتوراه في جامعة درم في كلية التربية في تخصص تقنية المعلومات والاتصالات في التعليم (التعلم الإلكتروني). قد حضر لبدء رحلته العلمية لجمع المعلومات وإجراء المقابلات بتاريخ ١٠/١/١٤٢٩هـ. وقد انتهى منها حسب إفادته بتاريخ ٣٠/١٢/١٤٢٩هـ. للإحاطة.

وتقبلوا تحياتي،،،،،

مدير عام التدريب والابتعاث

د/ سعد محمد الماضي

رصيد ملف ME 131

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