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Implementing e-learning in the Jordanian Higher Education System: Factors affecting impact

Ahmad Al-adwan
Cardiff Metropolitan University, Wales, UK

Jo Smedley
University of Wales, Newport, Wales, UK

ABSTRACT

The increased involvement of technology in all aspects of our lives places educational institutions under pressure to include these aspects at the heart of their learning. This ensures that they continue to be competitive in a constantly changing market with international and cultural links. This study explores the factors that influenced the development of learning through technology at two Jordanian universities, focusing on full-time staff and students. It considers the general attitude towards engaging in learning through technology with outcomes demonstrating that training and development is required prior to implementation to adequately support the learning transition. The organisational infrastructure often presents the greatest barrier to such developments. Informed by the outcomes of the study, a training and development programme has been designed, developed and implemented to support the cultural change and increase its impact.

Keywords: *e-learning; technology; culture; learning; higher education; Jordan.*

INTRODUCTION

Undoubtedly, the implementation of e-learning systems in higher education has enabled a dramatic change in teaching and learning practice. The success of e-learning adoption across an organisation depends on several factors, for example, the availability of technology, how students and instructors are supported in its use and the integration of technology within the student learning experience. Transformation of the learning style presents several challenges including changes in the cultural expectations and the continuing development of technological skills of staff and students. These aspects need to be managed and implemented effectively to achieve overall enrichment of student and staff learning experiences, which are enhanced through the appropriate use of technological blends.

The purpose of this research was to consider learning using technology in Jordan, reflecting that the more traditional approaches often made implementation challenging due to established staff practices and student learning expectations. In particular, the study at two Jordanian Universities determined technological factors that influenced the involvement of full time students and faculty members in e-learning programmes within the Jordanian Higher Education system. It also explored the general attitudes of students and faculty members towards e-learning.

LITERATURE REVIEW

E-learning refers to the use of information and communication technologies (ICT) in different processes of education to support and enhance learning in higher education institutions. This

includes the use of ICT technology as a supplement to traditional classrooms, online learning or mixing the both modes (OECD, 2005). E-learning offers institutions and their students the flexibility of place and time of delivering or receiving learning information. Continuing professional development practices in today's fast moving work place environment increasingly involve the use of modern technologies as part of the quest to provide a flexible and responsive learning experience (Smedley, 2010). E-learning is beginning to spread widely all over the Middle East region, as access to different technology forms improves. For example, Qatar is developing and expanding its e-learning facilities (ITP, 2008).

The term 'e-learning' has been applied in different contexts, such as distributed learning, hybrid learning and online-distance teaching (Maltz et *al.* 2005). In an e-learning environment, a variety of tools and technologies are employed, for example, internet mediated teaching, web-based education, TV and radio broadcast, virtual classrooms and distributed learning (Rosenblit, 2009). Online learning can be more flexible and often involves more technologies, for example, audio chatting, video conferencing and online discussion (Hrastinski, 2008). All these technologies give learners the opportunity to interact with instructors and other learners effectively and flexibly.

E-learning offers additional opportunities for interactivity between students and tutors during content delivery (Wagner *et al.* 2008). In a hybrid (blended) course, a significant portion of traditional face-to-face class time is replaced by online components (OIT, 2009).

From the students' aspect, e-learning allows the exploration of more flexible ways for learning with reduced need for travel to attend classes. The learning is replaced by interaction opportunities with instructors and other students on an anywhere-anytime-anyhow basis. Hence, e-learning offers avenues for students to continue their learning to acquire new and upgrade existing skills at a time and place of their choice. Zhang *et al.* (2006) comments that e-learning through interactive video facility allows student to watch any activities conducted inside the classroom and listen to instructors several times if needed. This provides tutors with more ways to interact with students and to provide them with immediate feedback (Brown *et al*, 2008). Those who adopt advanced technology during the teaching and learning process need to possess a range of ICT skills (Juhadil *et al* (2007)). This is an essential part of attracting more students and enriching the student learning experience.

Infrastructure

Undoubtedly, information and communication technologies have changed the approach of how learning materials are delivered to students at higher education institutions. ICT offers continuous educational improvements through offering online learning services, greater information access, greater communication and cost efficiency (Sife *et al.* 2007). Appropriate infrastructure for ICT development, (i.e. internet, extranet, intranet and LAN networks) is considered one of the biggest challenges in the implementation of e-learning in higher education institutions, particularly in developing countries (Fares, 2007). Salmon (2004, p.30) argues that an e-learning environment must provide students and teachers with a high degree of reliability and accessibility. Technological obstacles in an e-learning environment often occur in one of three basic components, namely hardware, software and bandwidth capacity. This strongly affects the process of e-learning adoption (Vencatachellum & Munusami, 2006). Higher education institutions need to provide wireless and wired networks with high connectivity "bandwidth" to avoid higher education e-learning initiatives being adversely affected (Kunaefi, 2006). Additionally, higher education institutions should invest in the right ICT infrastructure that allows students and teachers to easily access the ICT hardware, using friendly software and provide fixed technical support.

The technology acceptance model (TAM) seeks to explore the external variables that influence individuals' use such as their intentions, beliefs and attitudes (Park, 2009). It suggests that "perceived usefulness" and "perceived ease of use" of technology impacts the user's ability to engage with a particular form of technology.

Cultural Influences on E-learning

Any organization striving to obtain a successful e-learning strategy must be prepared culturally as well as technologically (Macpherson *et al* (2006)). Cultural factors have tremendous impact on how people learn, including the style of interaction and communication, constituting the core foundation of e-learning. These strongly affect two main components of online learning systems: (1) System development and design and (2) System usability and acceptance (Seufert, 2003). Cultural orientation must be considered in e-learning environments to design and promote a successful system (Downey *et al.* 2004). Edmundson (2007, p.26) stresses that one of the features of a successful e-learning system is the involvement of users' cultural characteristics in its design. This is an important motivational factor for participants and contributes to the acceleration of the adoption process.

Vrazalic *et al.* (2009) stress that culture and traditions are strongly linked to acceptable learning practises. Socio-cultural factors may pose several barriers during the implementation of virtual learning. Accordingly, specific styles of e-learning could be very successful in certain cultures but totally rejected in others. Interfaces of any e-learning system should also take into consideration the ethical and cultural communications of its users. For instance, eye-to-eye contact, especially between males and females in many different Arab countries, is deemed to be contrary due to their Islamic teachings which encourages humility (Rhema & Mlliszewska*,* 2010).

Challenges of E-learning

The rapid growth of e-learning courses at academic institutions has brought about a big change for students and tutors with various levels of academic experience (Educause, 2003). Instructors and students must possess specific skills to successfully use various e-learning tools. Students may demonstrate their learning efforts via different types of technology such as text, video or audio devices. Instructors often need to restructure their courses to be successfully incorporate-learning (Pirani, 2004). These activities represent challenges that all groups must overcome to succeed in e-learning.

Challenges to Students

During the implementation of e-learning activities, students often encounter several challenges and problems. Students need the necessary hardware and skills to progress access online information appropriately. Some students may lack experience and confidence in using technology. Not all students have the required skills to participate and succeed in e-learning. Arabasz *et al* (2003) assert that a student's technical limitations including hardware and bandwidth issues must be considered by instructors when designing online courses. Some instructors might add complex web pages or multimedia components to their courses, which require proper network access to be viewed. Students may also find it very difficult to comprehend their contents if they are expressed in complex language. In e-learning, students are more independent and responsible for their own learning process, due to lack of face-to-face contact with instructors and other students (Hatcher & Yen, 2005). This independency can require students to change their ways of thinking, behaviour and habits to successfully. Some students are not interested in using technology and feel more comfortable if they learn directly through

traditional methods of teaching involving regular face-to-face interaction in physical classrooms (Ishtaiwa, 2006).

Challenges to Instructors

One of the biggest challenges for instructors is the amount of time needed to deal with e-learning requirements (Smith & Taveras, 2005). Instructors need to develop and restructure their courses in a way that suits online requirements. These activities often require more time and increase workload. Additionally, there is often an expectation that tutors will respond to their comments as soon as possible. Consequently, it is important that appropriate boundaries are implemented so that realistic expectations are set initially and the student receives a positive learning experience. In an e-learning environment, instructors prepare for the class itself alongside developing a contingency plan in case of the occurrence of any technical problems (Arabasz *et al*, 2003). Some instructors suffer from lack of knowledge and training in using technology to design online courses and other instructors do not have the confidence to use technology in education (Educause, 2003). Moreover, some instructors still remain unconvinced about the integration of technology into their learning (Ishtaiwa, 2006).

Challenges to Institutions

Adopting e-learning in Higher education institutions raises many financial and strategic challenges (Levine & Sun, 2002). Financial problems push institutions to find adequate resources to develop and maintain proper equipment, provide static technical support, fund training courses and hire support staff. Many institutions underestimate the costs associated with designing and administrating online courses. Institutions need to urgently convince academic staff to engage with and accept the use of technology in their teaching. This is a significant challenge (Mackeogh *&* Fox, 2009).

Some academic staff possess strong allegiances towards the traditional teaching model (face-to-face teaching). This is often supported with lots of scepticism about the success of e-learning, especially regarding issues such as workload and loss of control and quality. Implementing or adopting an e-learning environment requires many organizational changes within institutions including staff organizational integration, flexible delivery to students (on/off campus), and new concepts of teaching (Ceri *et al*. 2005). Some of these forms of change raise additional challenges related to the methods of working especially for web instructional designers and web programmers. Institutions often face difficulties with recruiting specialist and skilled staff to develop high quality e-learning materials.

E-learning in Jordanian Higher Education

The Hashemite kingdom of Jordan is located in the heart of the Middle East with 6.316 million population size. His Majesty King Abdullah II strongly believes that the Information and Communication Technology (ICT) sector offers great potential to positively shape the future of education systems in the kingdom (MoICT, 2006). This is demonstrated through the Jordan education initiative project (JEI), which was launched in 2003. This focused on a partnership development with Cisco systems to create an effective model of internet-enabled learning (Cisco, 2005).

It is evident that large expenditure and substantial effort has been made by the Ministry of Education in Jordan to successfully implement e-learning developments in schools. While Jordanian school students recognize the potential of e-learning to support teaching and learning, infrastructure often limits student-student and tutor-student interactivity (Alomari, 2009)

Jordan has rapidly expanded its higher education system although it has not yet produced a sufficient qualitative leap (Sabri *&* El-Refae, 2006). Reflecting the world's University sector moving forward with e-learning, Jordanians higher education institutions are responding accordingly. E-learning offers alternative approaches to Jordanian traditional higher education institutions, encouraging them to re-evaluate the way they operate. In doing so, it provides potential to accommodate new information and communication technologies to enhance the student learning experience.

The demand for e-learning in Jordan is expected to rise in the next few years (Hinnawi, 2011). This is due to the sharp growth of internet and mobile users and the high literacy rates considered to be the highest among other countries in the region. Owing to these booming advances in information technology, it is important for higher education institutions to embrace the technological developments, redesigning teaching trends and developing researchers in the educational domain (Diabat, 2011). The increased demand from students to change teaching methods in traditional lectures pushes higher education institutions to consider e-learning to provide online courses and e-training programs. Jordanian students realise that information technology is the future and, therefore, they are looking for more flexible opportunities of learning that help them to develop their skills and the educational outcomes. Accordingly, many Jordanian institutions have adopted e-learning to meet the increased demands for enhanced and flexible teaching methods.

METHODOLOGY

Changing staff culture and motivating staff to use new technologies in learning and teaching is considered to be the main obstacle (Al-Adhaileh, 2008). Faculty staff prefer to use pen and paper and be in front of their students. There are also considerable technological infrastructure difficulties, which limit developments (Al-Ahmad, 2010).

In this study**,** pilot studies guided the content and implementation of a questionnaire and supporting focus groups involving the faculty and full time students at the "Al-Zytonah" and "The Applied Science" Universities in Jordan. These considered the technological factors and explored attitudes to integrating ICT in preparation for the implementation of e-learning into curriculum programmes,

Of one hundred distributed questionnaires, seventy nine were returned and analysed (65 from students studying English and 14 from faculty members). Open-ended questions and close-ended questions were used including Likert scales. A high response rate was achieved through the involvement of faculty staff for questionnaire distribution using email.. Instructors are respected people in the Jordanian culture. Students are expected and expect to obey them.

Focus groups were held via Skype to supplement and explore the outcomes from the questionnaires. The focus group questions were carefully designed to meet the objectives of the study. The questions addressed very specific issues. Prefacing each focus group discussion, the interviewees were offered a brief summary of the outcomes of the questionnaires. This gave them the opportunity to discuss the results and identify additional issues.

The focus groups were conducted with seven faculty members from each of the universities. Each interview took twenty minutes and a semi-structured style was chosen. The researcher had a set of themes and questions to be covered by the respondent. Questions explored three main themes: their interests in e-learning and its opportunities, ICT skills and attitudes toward e-

learning environment. Four further sections covered personal information, e-learning and ICT skills, technology access, and student attitudes.

FINDINGS

Demographics

Participants were asked for information about their name (optional), gender and age. The majority of the respondents (85%) were between the age of 18 and 32 (Figure 1). 56% of the participants were males and 44% were females.

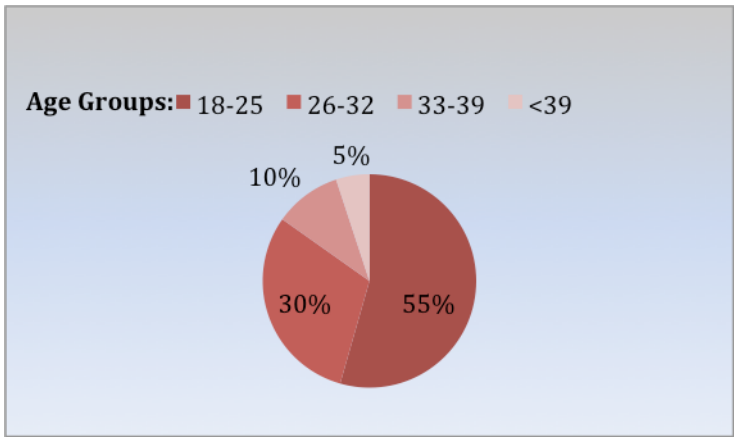

Figure 1: *Demographics of respondents*

E-learning and ICT Skills

Participants were asked thirteen questions relating to their IT skills and experience using e-learning tools. Each question had four rating scales from 0 to 4, (0: "***No knowledge"***, 1: ***"beginner"***, 2: "***intermediate"***, 3: "***advance"*** and 4: "***expert"***). Responses demonstrated that the majority of users in this section indicated that their skills lay between intermediate and advanced levels (Figure 2).

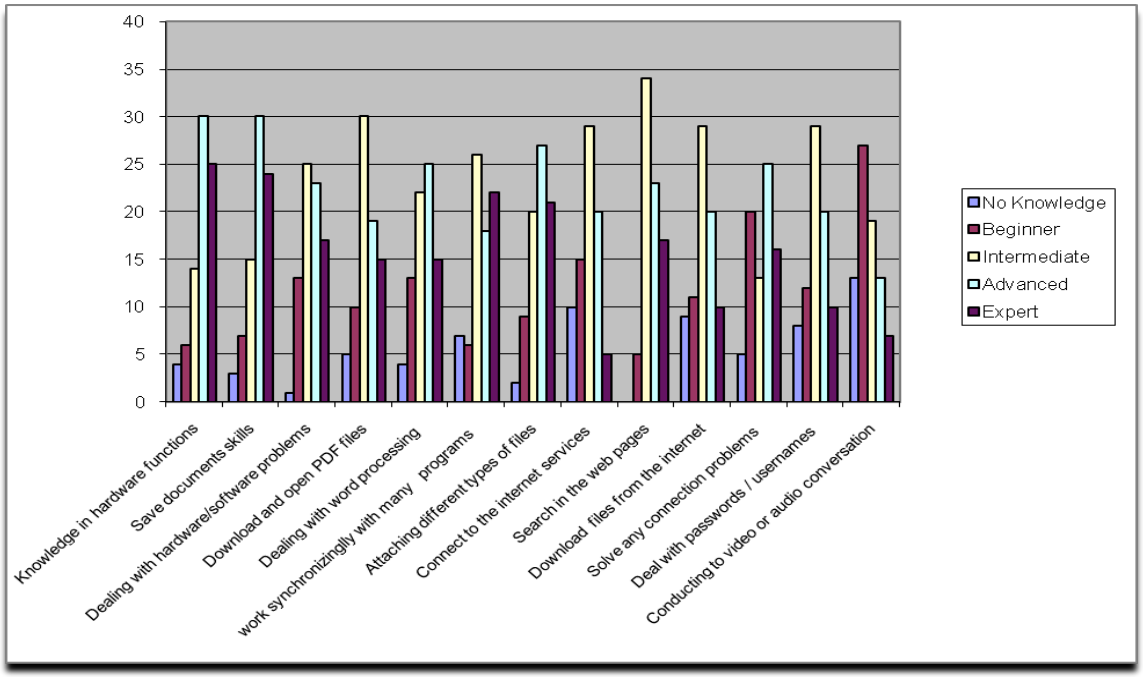

Figure 2: *E-learning and ICT Skills Findings*

Technology Access

Participants were asked about the access that they had to the Internet and other communication technologies. The results showed that 51% of the participants have their own computers with 23% having reliable internet connection (Figure 3), i.e. with appropriate bandwidth and low disconnection rates enabling effective user experience. 87% of the participants did not have access to a reliable computer, i.e. a reliable machine in good working order which did not usually crash and had all the necessary software installed.

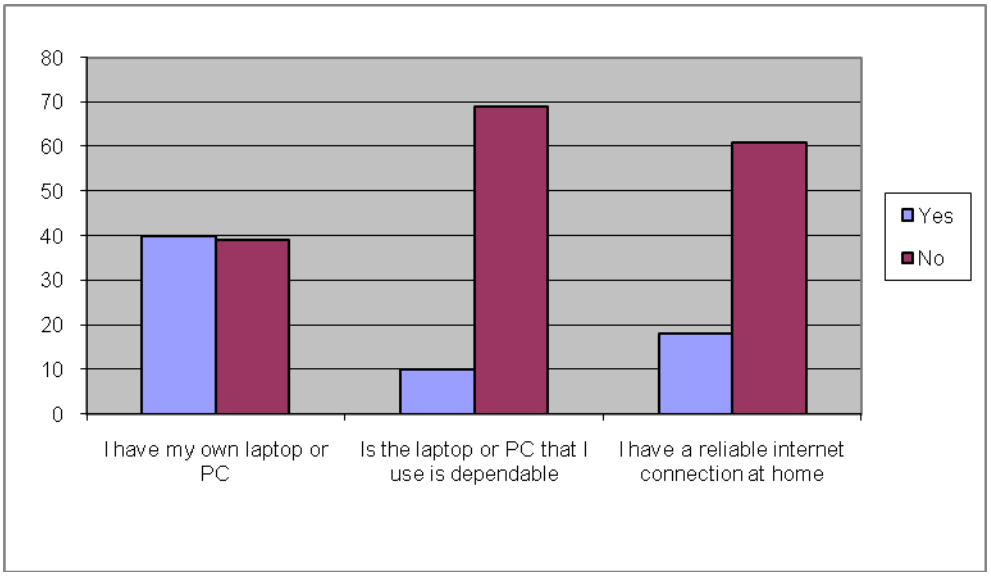

Figure 3: *Technology Access Findings*

Respondents Attitudes

This section investigated participants' attitudes toward e-learning. It consisted of five questions with five rating scales: 1: "***Never****",* 2: "***Seldom***", 3: "**About *half time***", 4: "***Usually****"* and 5: *"**Always**"*. The results (Figure 4) showed that 8% of the respondents felt that they did not need to see their lecturers to understand lectures whereas 37% of respondents felt that they needed to attend classes and see their lecturers on a regular basis to understand what they are studying. 5% of the participants reported that they would prefer to work and study alone, while 32% of the participants believed that they could occasionally study or work independently. 38% of the participants indicated they rarely analysed lectures and summarized their contents. Finally, just 5% of the participants stated that they took full responsibility for their own education.

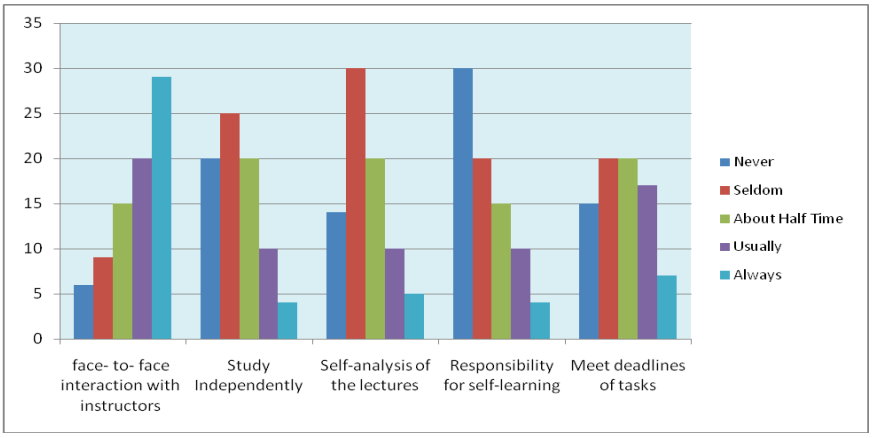

Figure 4: *Respondents' Attitudes Findings*

Focus Group Outcomes

Focus groups were held to further explore the findings from the questionnaire survey. These particularly highlighted various cultural views of e-learning. Outcomes were divided into two types – those who favoured e-learning and those who were sceptical about it.

E-learning Advocates

Those with a positive attitude towards e-learning were fully aware of its benefits due to their experience in engaging with various e-learning programmes, for example, during studies in the UK and the United States. The cost effectiveness, immediate feedback and diversity of data sources contributed to their motivation in taking part. There were many other motivational factors that contributed to the acceptance of e-learning, i.e. awareness of the opportunities that technology could offer and its role in improving the quality of education, possessing effective technological skills facilitating engagement in e-learning and acquiring an appropriate mentality that values the beneficial uses of ICTs in the educational process.

Three lecturers agreed that e- learning was essential for modern education, explaining its role in improving quality. They thought strongly that students did not have to physically meet their lecturers in order to learn. They reasoned that virtual meetings would provide an appropriate means of support. E-learning approaches offered students the opportunity to be creative and independent as this approach enabled them to select the time and place for studying enabling better performance and results. Through e-learning, lecturers confirmed the importance of immediate feedback - a vital part of learning. One of the interviewees stated:-

> "*Side by side with e-learning, lecturers can give their students faster feedback without the need to meet them face-to-face helping students to study continuously without any interruptions*".

E-learning tools helped lecturers to provide students with new sources of information and create encouraging and supportive educational methods. It also provided enhanced opportunities for interaction between instructors and students enabling more flexible communication and quicker feedback. Instructors were not always available as they had lectures and many other tasks to perform, forcing students who needed some help to wait until lecturers become available. Staff participants agreed that saving and redirecting time and effort were some of the main benefits of using e-learning in Jordanian universities. One commented:-

> "I *do not have lectures every day, so my students have to wait for me till I can see them. Sometimes I do not have enough time to meet all students who have questions or any enquiries. This situation forced me to ask them to come back next day although they may not have any lectures to attend. This long process requires spending more money, time and efforts, whereas if any e-learning tools such as Skype or online courses are in use, it would save a lot".*

However, when some of the interviewees were asked about their technological skills and experience, they highlighted that they had received a good IT experience during their study in the UK and the United States. One interviewee stated that he had never experienced e-learning but he had the abilities and skills to deal with these opportunities. Additionally, when asked if they had computers and internet connections with appropriate bandwidth, these services were readily available. However, they stated that:

> "We *cannot guarantee the quality of the Internet; sometimes it becomes too slow and gets disconnected many times. This depends on the service provider*".

They highlighted the need for additional training to develop their skills to deal with complex and advanced technology applications. One of the interviewees explained:-

> "*I have the basic skills to deal with different e-learning tools such as audio and video conferencing, but sometimes you need to be professional to handle any unexpected matters. As a result, training and development courses are very important for lecturers. Moreover, time management in an e-learning environment is vital. Students expect lectures to start on time and receive immediate feedback"*.

E-learning Sceptics

Those who were uncertain about the success of e-learning implementation focused on students and their readiness to meet the demands of e-learning. They agreed that students and lecturers could not raise their skills levels and adapt culturally to a level that would effectively enable their engagement with e-learning. Oral face-to-face communication plays a significant impact in the Jordanian culture and education. Therefore, it was perceived that e-learning would upset the transfer of information resulting in uncertainty and lack of impact in the learning process.

Four lecturers were uncertain about the success of e-learning for several reasons. They felt that cultural factors, IT infrastructures and IT skills were the main barriers to the wide scale adoption of e-learning at various universities in Jordan. They noted that current students wanted technology to be embedded in their educational process, explaining that most of them were familiar with many Internet technologies. Alternatively, they indicated that the e-learning environment was different from using various internet applications. Hence, students' lack of specific skills could significantly affect their e-learning participation.

Time management for lecturers may not meet the demands of e-learning, particularly as it was evident that lecturers often did not have the time to meet unplanned communication requirements. For instance, providing constructive feedback to a large number of students and conducting subsequent online chatting led to additional workload and further responsibilities. In such situations, staff felt more comfortable if they met their students in classrooms initially and online feedback and queries was scheduled to avoid overload and mismatched expectations and experiences.

It was apparent that interviewees placed considerable emphasis on the influence of cultural factors. They agreed that an oral communication style had great impact. Students and lecturers in the Jordanian society considered face-to- face contact to be the most effective method to communicate, as they can show respect and express their issues directly. One of the interviewees argued:-

> "*Our students are familiar with traditional learning for generations. It is difficult to be sure of the impact of e-learning because we cannot guarantee that students and lecturers will engage sufficiently to lead to the success of the programme".*

Interviewees demonstrated a lack of skills to deal with e-learning tools. Two of the interviewees pointed out that they considered themselves to be older and had very limited knowledge of computers and the internet. One of them stated:-

"*I prefer to use my pen rather than using a computer. I have used this approach for a long time now. Moreover, I can't imagine myself contacting my students online through technologies such as video conferencing".*

Other interviewees showed that they possessed limited basic skills in using computers and its applications:-

"*Sometimes we are struggling to deal with some situations. We have problems with downloading attached files in e-mails*".

When the interviewees were asked about the availability of computers and their Internet connections, it was clear that their facilities were adequate. When the interviewees were asked about their abilities to teach within unstructured educational environments, there was considerable uncertainty. This demonstrated the need for effective organisation of e-learning so that students and lecturers could be suitably reassured about the agenda for their programme of learning:-

"*Our students are familiar with learning in a very structured educational environment where they*
expect to follow lecturers' directions. A change to this approach could cause difficulties for student learning".

All participants agreed that time management and attitudes were important considerations as learning through technology required timely responses and feedback. The lecturers demonstrated that they would have difficulties with meeting expectations of the e-learning process:-

"*I do not have time to reply to all the enquiries of students. I prefer talking to all students in the class which saves time and leads to better understanding*".

DISCUSSION

Using technology to support learning was a key attribute in the success of the overall student learning experience. The findings demonstrated that students who suffered from a lack of ICT skills were not able to benefit or engage with e-learning opportunities whether these took place in classes or elsewhere. This lack of ICT skills resulted in a type of resistance among students which led to uncertainty about the benefits of e-learning. Hence, increased availability and familiarity with the desired technologies could contribute to raising the level of ICT skills of students.

Many students had limited interaction with computer applications as some of them did not have computers at home or they only use computers in specific places, such as their universities. Students with limited access were usually keen to keep lecturers at the centre of the learning process. Difficulties with obtaining the required technological infrastructure meant that students often performed poorly compared to students who had adequate IT infrastructure. This may have influenced students' lack of interests in e-learning, and lead them to prefer the traditional education environment in which they perceived that they could perform better.

Findings from the study indicated that working independently was unpopular. 62% of the students indicated that face-to-face contact with tutors was a vital part of their learning. Also, 57% of the students indicated that they preferred not to study independently and welcomed the opportunity to link with a tutor and members of the peer group. 53% of the students did not take

self-responsibility of their learning with only 38% of students indicating that they analysed their learning from lectures. Finally, 19% of students showed that they could not finish their tasks on time by just relying on their self-motivation with 25% occasionally managing to do so. The overall impression was that students depended significantly on their teachers during as their education progresses. They strongly believed traditional classes helped them to understand the content of lectures.

This phenomenon is considered an essential component of the Jordanian education system where teachers are the centre of the educational process. Students in Jordan are used to strictly following tutors' directions with teachers seen as the main source of motivation and information for students. Overall, students in Jordan usually accomplish their tasks because they are (and expect to be) pressured by their teachers. Additionally, many students in Jordan consider the internet as a device for passing time and communicating with others. Within such an educational culture, students' attitude is negatively positioned towards e-learning as they defer to their teachers' direct instructions rather than following independent thinking.

Self-motivation is considered to be a crucial factor to the success of students in e-learning. Integrating ICT with the process of learning depends on the personal motivation of the participants. Clearly, students in Jordan need to be supported with their digital enhanced learning to enable them to maximise the potential of ICT in their learning process.

Most Jordanian universities use various technological frameworks with e-mail as a method of communication between students and instructors to guide and support their learning. However, traditions have great impact on learning in Jordanian universities. E-mail is available at most universities in Jordan although both professors and students do not usually make extensive use of this means of communication. Instead, they prefer to communicate directly face to face as they consider this demonstrates more formality and greater respect.

CONCLUSION

This study focused on the abilities of full time students and faculty members of Al-Zytonah and the Applied Science Universities in Jordan to successfully engage with e-learning programmes. The research investigated the technological factors that could influence the involvement of both groups in participating. It also explored their attitudes and readiness to integrate learning through technology into their learning experiences. Outcomes demonstrated that students in Jordan need to increase the level of their technological skills to significantly benefit from the opportunities offered by e-learning. Considerable preparatory support is required to ensure that faculty and students feel adequately and appropriately supported in their individual learning processes. Further studies could be undertaken to explore the strategic and operational opportunities focusing on technological readiness, skills and attitudes alongside cultural influences before e-learning can have a significant impact to influence changing practices within the Jordanian student learning experience.

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