

# ***EVALUATING E-LEARNING IN JORDANIAN INSTITUTIONS Why is it Lagging?***

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E-learning has been a hot topic for academics, technical researches, and practices because there is a need to employ advancements in technologies to support the education process and help academics and universities. E-learning, together with classical learning, can further enhance the learning process through the benefits of the new technologies. Jordan shows interest in e-learning, which is reflected in joint programs with international agencies such as European Economic Community and Institute of Electrical and Electronics Engineers. However, e-learning in the form of online education is not being utilized by most Jordanian Universities. In this research, we try to evaluate the deployment and progress of e-learning in the country, and find the reasons behind the delays in utilizing the technology and using it as a second channel for providing education. A questionnaire was designed and distributed in several Jordanian universities to both students and educators. Analysis of questions' results show general acceptance of both communities, but still many obstacles hinder advancement. These obstacles include inadequate infrastructure and lack of sufficient support of government and higher education senior management.

## ***INTRODUCTION***

E-learning is a term covering a wide set of applications and processes, such as web-based learning, computer based learning, and virtual classrooms. It also includes the delivery of content using electronic equipment. E-learning process can be offered in two ways: asynchronous and synchronous. Asynchronous is the traditional e-learning process in which courses'

material are delivered by electronic means and offline, the latter is web-based learning which occurs at real time and is considered distance open learning (Mashhour, 2008; El-Seoud, Al-khasawneh & Awajan, 2007).

A study by MacKeogh and Seamus (2009) investigated the rationale behind adopting e-learning strategies in higher education and classified it into seven categories of reasons: enhancing reputation, developing information

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The Quarterly Review of Distance Education, Volume 11(4), 2010, pp. 269–279  
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ISSN 1528-3518  
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skills/literacies, widening access, supporting the disabled student, improving quality of teaching and learning, increasing flexibility, and reducing cost and improving cost-effectiveness. Al-adhaileh and Al-Shoaibi (2009) summarize the e-learning challenges at Hashemite University of Jordan into: lack of motivation and large workload of teaching staff, lack of experienced applicant, and lack of education technological proficiency for the development of e-learning and high cost of course creation.

This research will investigate e-learning in Jordanian higher education institutions and find the reasons behind the delays in applying e-learning and taking advantage of its technical capabilities. There are many factors that have been identified in the literature that affect e-learning. These factors are related to the technical (network readiness and transmission rate), human (instructor and student), content, system, and culture.

We will try to evaluate these factors and see which factor(s) has(have) the most affect on applying e-learning in Jordan. Understanding the problems and the needs will help in finding recommended solutions.

### ***THE EFFECT OF LEARNING METHOD ON STUDENT PERFORMANCE***

Technology is part of student life, and operator and educator must provide them with best-integrated technology that fits their need and expectations. Ravenscroft (2001) argues that

we cannot truly transform educational practice for the better through using new technologies unless we examine the roles the computer can play in truly stimulating, supporting and favoring innovative learning interactions that are linked to conceptual development and improvements in understanding. (p. 134)

This understanding will help to improve choosing the e-learning system to use, and to provide the teacher and students with the best fit technology to use.

It has been said that the majority of faculty members view online education as equal or superior to traditional education (Allen & Seaman, 2006). However, it is difficult to conclude that e-learning is more, less, or equally effective at the learning level than traditional classroom-based training (Allen & Seaman, 2006; Jamlan, 2004; MacKeogh & Seamus, 2009). It is not surprising that the results of comparing e-learning with traditional face-to-face learning differ so widely as the conducted studies differ in many ways from each other (e.g., the content, duration, and goals of the course). As has been stated earlier, many factors have been identified in the literature as affecting e-learning. These factors are related to the technical, human, system, and culture. Selim (2007) classified these factors into four categories: instructor, student, information technology, and university support. Some of these factors shown in the literature affect the behavior intention to the usage and acceptance of the e-learning; others affect the perceived usefulness or perceived ease of use (Al-Amari & Hamad, 2008). Papp (2000) identified a number of critical success factors for assisting the university e-learning development. Among these factors are the suitability of the course for e-learning environment, e-learning course-content and maintenance, and intellectual property. After reviewing the literature we identify seven important factors that affect e-learning, including teaching materials (Rogers, 2001), tutorial support (Ashton & Shuldham, 1994; Heidari & Galvin, 2003; Liddell et al., 2002), environment (Zhou Nanzhao, 2003), assessment techniques (Stiggins, 2001), collaboration with peers (or groups) (Crook, 1996), mutual communication (Fenton & O'Leary, 1990), and teaching styles (Worrell & Kuterbach, 2001).

### ***E- LEARNING STATUS AT JORDANIAN UNIVERSITIES***

In spite of the widespread of e-learning centers at Jordanian institutions, these institutions are still suffering from problems that prevent them

TABLE 1  
E- learning Usage in Jordanian Universities

<i>University Name</i>	<i>Type</i>	<i>E-learning Unit</i>	<i>Software Available</i>	<i>Distance Learning</i>
Hashemite University	Public	Yes	Moodle	Yes
University of Jordan	Public	Yes	Blackboard	No
Yarmouk University	Public	No	Claroline	No
J.U.S.T	Public	No	Moodle	No
Mutah	Public	Yes	Moodle	No
Al-Hussein Bin Talal University	Public	No	Claroline	No
Tafila Technical University (TTU)	Public	No	Has e-learning	No
Philadelphia University	Private	Yes	Moodle	Yes
Arabic Open university (AOU)	Private	Yes	Moodle	Yes
Petra university	Private	Yes	Blackboard	No
Princess Sumaya University	Private	Yes	Moodle	Yes

from e-learning as a delivery channel over a distance. The attempts are still at an immature stage. Alsunbul (2002) indicated that the Arab region is considered a late adopter of distance education; the problem extends to include systems, networks, government regulations, as well as student and academics attitudes toward e-learning. Jordan, as a developing country, will need special arrangements when introduced to such a new environment. Successfully transferring e-learning implementation from the Western states to the Arab region will not occur instantly (Dirani & Seug, 2009). Nevertheless, there has been some advancement towards e-learning in the country; Table 1 shows the different universities in Jordan that are involved in moving towards e-learning technology.

### **RESEARCH OBJECTIVES**

The study will attempt to answer a number of questions and evaluate the reasons behind the delay in employing the technology to deliver electronic education to students. The research questions are categorized into two sets; one targeting students, and the other targeting educators. The research questions are:

1. What factors are effecting the spread of e-learning in Jordan?
2. What are the attitudes of students and educators toward e-learning?
3. Can the current infrastructure support e-learning and provide the required service for electronic courses?
4. What are the challenges facing e-learning, and how can they be overcome?

### **METHODOLOGY AND RESEARCH FINDINGS**

The research used descriptive statistics to evaluate the barriers to deployment of e-learning in Jordan. The data were collected through two sets of questionnaires, one distributed randomly to selected students, and the other distributed randomly to instructors. The analysis includes:

1. A statistical description table that includes mean and standard deviation. Mean values range from 1 to 5.
2. A table that examines the items included in each topic either they are significant or not.

### ***Students' Data Collection and Analysis***

Three hundred questionnaires were distributed randomly to students in four major universities in the country and 273 were returned. Seventeen questionnaires were dismissed because they were not fully answered, leaving 256 questionnaires for analysis.

### ***Students' Perceptions of E-Learning***

There was an indication that there is a high acceptance from most of the students toward applying e-learning systems, as shown in Tables 2 and 3. Table 2 displays students' acceptance of the e-learning systems in the university and Table 3 shows that there is a significant relationship for student acceptance of e-learning.

### ***System Availability for Students to Access E-learning***

Tables 4 and 5 indicate that there is a problem with access to e-learning systems in the university by some students due to shortage in PCs or Internet connectivity.

There is a significant relationship for the ability of students to reach the e-learning systems in the university ( $T$  value = 0.0, see Table 5).

### ***Students' Interaction in E-learning Environment***

Tables 6 and 7 indicate that the interaction of the most of students while applying e-learning will be improved, and that there is a significant relationship for the students' interaction

TABLE 2  
Students' Acceptance of E-learning Systems in the University

<i>Number</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	E-learning enhances my options for education over traditional education only.	4.18	0.89	1
2	E-learning provides more freedom for attending classes.	3.91	3.91	2
3	My university promotes taking online courses	3.38	3.38	3
Total		3.82	3.82	

TABLE 3  
Result of One-Sample  $T$  Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
Students' perceptions of the e-learning systems	14.088	139	0.0

TABLE 4  
The Ability of Students to Access the E-Learning Systems

<i>Number</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	I don't have Internet access all the time	3.43	1.36	1
2	I do not own a PC, and use public available ones	3.19	1.34	2
Total		3.31	1.25	

TABLE 5  
Result of One-Sample  $T$  Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
The system availability for students to access e-learning	2.924	139	0.0

TABLE 6  
Student Interaction While Applying E-Learning

Number	Item	Mean	SD	Rank
1	E-learning enhances interaction between students and instructors	3.51	1.17	2
2	E-learning enhances interaction among students	3.56	1.11	1
Total		3.53	1.01	

TABLE 7  
Result of One-Sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
The students' interaction in e-learning	5.51	139	0.0

TABLE 8  
The Expected Benefits of Students When Applying E-Learning

Number	Item	Mean	SD	Rank
1	E-learning allows access to classes any where any time.	4.33	0.84	1
2	E-learning improves my computer skills	4.33	0.86	1
3	E-learning makes it easy to seek higher education.	4.09	0.81	2
4	E-learning makes it easy continue education while working.	4.02	0.88	3
5	E-learning improves my self-leaning skill.	4.01	0.95	4
Total		4.15	0.58	

TABLE 9  
Result of One-sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
The perceived benefits of e-learning for students	23.611	139	0.0

when applying e-learning ( $T$  value = 5.51, with  $Sig.$  = 0.00).

#### *Perceived Benefits of E-learning for Students*

There is an indication that most of students will achieve many benefits when applying e-learning. These benefits are listed in Table 8.

There is significant relationship for the expected benefits of students when applying e-learning in the university ( $T$  value = 23.611,  $Sig.$  = 0.00). See Table 9.

#### *Perceived Cost of E-learning*

There is an indication that the cost students paying for higher education when applying e-

learning is more affordable than the cost they are paying in traditional learning. See Tables 10 and 11.

There is a significant relationship for the cost students pay for higher education,  $T$  value (5.211),  $Sig.$  (0.00). See Table 11.

#### *Expected Difficulties of E-learning*

There is an indication that most of students don't have a problem using PCs and the Internet. See Tables 12 and 13.

There is a significant negative relationship for the expected difficulties of students when applying e-learning systems,  $T$  value (-9.93),  $Sig.$  (0.00). See Table (13).

TABLE 10  
Costs of E-learning in Higher Education

<i>No.</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	It is expensive to own a PC.	2.9	1.24	3
2	E-learning is cheaper than traditional study.	4.09	0.89	1
3	It is expensive to have Internet access.	3.05	1.25	2
Total		3.34	0.78	

TABLE 11  
Result of One-sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
The perceived cost of e-learning	5.211	139	0

TABLE 12  
Expected Difficulties of Students When Applying E-learning Systems in the University

<i>No.</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	I find it difficult to use a PC	1.86	0.96	3
2	I find it difficult to use the Internet	1.91	0.94	2
3	It is easy to switch from traditional education into e-learning	3.71	0.98	1
Total		2.49	0.6	

TABLE 13  
Result of One-Sample *T* Test for Expected Difficulties

	<i>T</i>	<i>df</i>	<i>Sig.</i>
Expected difficulties to switch from traditional education into e-learning	-9.93	139	0.0

### ***Instructors' Data Collection and Analysis***

One hundred twenty questionnaires were distributed randomly to educators in different departments in four major universities in the country. All the questionnaires were retrieved manually and used in the analysis. The results of the questionnaire are analyzed using means, standard deviation, and applied one-sample *T* test for the instructors' acceptance of the e-

learning systems in university. Tables 14-27 summarize these results.

### ***Instructors' Perceptions of Readiness to Implement E-Learning***

There is a positive indication of the acceptance of most instructors towards applying the e-learning systems. See Tables 14 and 15.

TABLE 14  
Instructors' Perceptions of Readiness to Implement E-Learning

No.	Item	Mean	SD	Rank
1	I am comfortable teaching online	4.2	0.89	2
2	I have some skills and can teach online	3.7	0.97	3
3	I need training to teach online	4.21	0.66	1
Total		4.04	0.56	

TABLE 15  
Results of One-Sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
The instructors' perceptions of readiness to implement e-learning	14.44	60	0.0

TABLE 16  
E-learning Infrastructure and Qualified Instructors Availability

Number	Item	Mean	SD	Rank
1	The technology is available to provide good infrastructure to perform e-learning.	3.15	1.29	1
2	My university has the infrastructure needed to apply e-learning.	2.93	1.06	2
Total		3.04	1.02	

TABLE 17  
Result of One-Sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
The infrastructure availability to apply e-learning systems	0.31	60	0.75

There is a significant relationship for the instructors' acceptance of the e-learning systems. See Table 15.

#### *Infrastructure Availability for Applying E-Learning Systems*

There is a negative indication that Jordanian universities have the infrastructure and qualified instructors for applying e-learning systems. Only few of them may have adequate infrastructure. See Tables 16 and 17.

There is no significant relationship for the availability of infrastructure and qualified

instructors to apply e-learning systems. *T* value (0.31) and *Sig.* (0.75). See Table 17.

#### *Universities and Government Support to Implement E-learning*

There is a negative indication that the support offered from the universities' management and the government in applying e-learning systems is not enough. See Tables 18 and 19.

There is no significant relationship for the support offered from the university and the

TABLE 18  
Universities and Government Support to Implement E-Learning

<i>No.</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	The government offers a good and clear strategy to apply e-learning	3.07	1.08	3
2	My university is investing for the infrastructure needed to apply e-learning systems	3.2	1.11	2
3	The administration in my university fully support implementing e-learning	3.26	1.03	1
Total		3.17	0.87	

TABLE 19  
Result of One-sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
Universities and government support to implement e-learning	1.56	60	0.12

TABLE 20  
Ease of Using E-learning Systems by Instructors if Applied

<i>No.</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	I have difficulties using the Internet	1.7	0.92	3
2	It is easy to prepare materials for online classes	3.87	1.04	2
3	It is easier to evaluate e-learning students on their performance	3.87	0.76	2
4	It is as easy to update materials for online class as it is for traditional learning	4.31	0.65	1
Total		3.44	0.55	

TABLE 21  
One-Sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
Instructors' perception of e-learning ease of use	6.19	60	0.0

government in apply e-learning systems (*T* value = 1.56, Sig. = 0.12). See Table 19.

#### *Instructors' Perception of E-learning Ease of Use*

There is an indication that almost it is easy for instructors to use e-learning systems if applied, although some of them need training to be familiar with e-tools. See Tables 20 and 21.

There is a significant relationship for how much it is easy for instructors to use e-learning

systems if applied, *T* value (6.19), Sig. (0.00). See Table 21.

#### *Perceived Interaction Between Students and Instructors Through the E-Learning System*

There is a positive indication that the interaction between students and instructors when applying e-learning systems will be improved. See Tables 22 and 23.

There is a significant relationship for the perceived interaction between students and

TABLE 22  
Perceived Social and Educational Interaction Between Students and Instructors

<i>Number</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	E-learning will enhance learning interaction between instructors and students	3.79	1.02	1
2	E-learning will reduce students and instructors social interaction	3.07	1.29	2
Total		3.42	0.65	

TABLE 23  
Result of One-Sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
Perceived interaction between students and instructors through the e-learning system	5.06	60	0.0

TABLE 24  
Quality of Education

<i>No.</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	E-learning provides high quality of education	3.77	1.06	3
2	E-learning extends students access to information and learning material	4.13	0.92	2
3	E-learning makes easy to access the latest learning materials	4.28	0.92	1

TABLE 25  
Result of One-Sample *T* Test for Quality of Education

	<i>T</i>	<i>df</i>	<i>Sig.</i>
E-learning quality of education	9.63	60	0.0

TABLE 26  
Instructors' Access to the E-learning Systems

<i>No.</i>	<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Rank</i>
1	I don't have Internet access all the time	2.75	1.36	1
2	I do not own a PC, and use publicly available ones	2.48	1.26	2
Total		2.61	1.23	

TABLE 27  
Result of One-Sample *T* Test

	<i>T</i>	<i>df</i>	<i>Sig.</i>
System and access availability for instructors to the e-learning system	-2.42	60	0.01

instructors through the e-learning system,  $T$  value (6.19), Sig. (0.00). See Table 23.

### *E-Learning Quality of Education*

There is a positive indication that the quality of education is improved when applying e-learning. See Tables 24 and 25.

There is a significant relationship for the instructors' acceptance of the e-learning systems. See Table 25.

### *E-Learning System and Access for Instructors*

There is a positive indication that access to e-learning systems is not a problem for most instructors. See Tables 26 and 27.

There is significant negative relationship between interaction students and instructors when applying e-learning systems,  $T$  value (-2.42), Sig. (0.01). See Table 27.

## **CONCLUSIONS**

Based on the analysis of the collected data, both Jordanian students and instructors have a high degree of acceptance rate towards applying e-learning in higher education institutions. Students may face some challenges with Internet access because of low connectivity, as PCs and the Internet are not always available for some outside the educational environment.

Some universities in Jordan have a qualified staff and the sufficient infrastructure that are needed for applying e-learning. However, the concept of taking lectures over the Internet is still not clear for the majority of the students. Students see that e-learning must be go side by side with the traditional learning process.

There are different forms of governmental support and this support is clear from a number of projects and initiatives such as the initiative entitled "laptop for every university student" with a suitable cost in order to increase the community members' access to technology. In spite of that, government support is still not

sufficient, and the cost of Internet connectivity is still relatively high.

## **Recommendations**

E-learning has been adopted by most countries around the world, and implemented by world-class universities. Jordan has to take positive and serious steps toward applying this new system of education; otherwise, Jordan will be left behind. Applying e-learning in universities is important because it enhances the quality of education and reduces students' fees. Moreover, it will increase the number of students; enrollment as they accept this new system. Therefore, there is a need for universities to introduce the new technologies and invest more in providing these technologies to students in the form of labs and/or well equipped specialized e-learning centers.

Although both instructors and students have a good background about using information technology (computers and Internet), the capacity to adopt e-learning systems by students and instructors needs to be enhanced by giving them more training on how to use e-learning effectively. Misunderstanding of e-learning is the dominant reason for negative opinion about this new learning style. Students do not have complete picture of e-learning—what it offers them and what exactly they will gain from using it. In addition, not all lecturers have a complete understanding of e-learning, so they do not understand how much it will help them and make their career more efficient.

Probably one of the main reasons for why students don't use e-learning is that there is not enough marketing for e-learning by the universities and by the lecturer to make students aware of the e-learning systems and to encourage students to use e-learning.

A cooperation scheme should also be built among government institutions and instructors at different universities to share resources and experiences, challenges, solutions and best practices in use of e-learning systems. Governments and universities must follow a clear

national plan for e-learning and a strong strategy to enhance the integrated application of e-learning systems in Jordan. The Ministry of Higher Education has to set rules and regulations for e-learning accreditation and establish measures that ensure the quality of education.

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