E-learning challenges in the Arab world: revelations from a case study profile

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Abstract

The overwhelming traditional knowledge delivery system for higher education in the Arab world demonstrates the pronounced information technology (IT) gap between Arab countries and the developed world. This study demonstrates the problems and possibilities of implementing e-learning in Arab educational institutions through analysing the attitudes of university professors ($n = 294$) in Lebanon towards three a priori e-learning dimensions. Favourable attitudes towards e-learning attested to faculty members' interest to get engaged in a fully-fledged e-learning programme in a country where the primary delivery educational model is essentially traditional. Discusses these attitudes in the light of the social, political and economic hindrances that impede the implementation of e-learning in the Arab region. A series of K-independent Kruskal-Wallis tests yielded significant attitudinal variations between males and females as well as between computer daily users and occasional users. Furthermore, daily computer users documented more favourable attitudes towards e-learning than their occasional user counterparts. Offers recommendations for the implementation of e-learning in "traditionally" demarcated educational systems in countries where the deployment of information and communications technologies is not widespread.

Introduction

The advent of the "global electronic revolution" in the twenty-first century has stimulated efforts towards shifting pedagogy from its conventional classroom-centred stronghold into a vibrant electronic Web-based interactive learning environment (Cuban, 1990; Shearman, 1997; Czerniak et al., 1999). Although the Web has become the modern tool of communication and information resource all over the world and the advanced technology it uses offers distinct advantages both to educators and students (Banga and Downing, 2000), research on the educational benefits of e-learning has yielded mixed results, as the e-learning trend has both outspoken proponents and critics.

Carl (1991), for instance, has adeptly detailed the positives of e-learning. In his view, e-courses can be monitored more easily than the traditional classroom, off-campus students can use electronic mail to have the same quality of communication with faculty members that on-campus students have, and e-learning may result in cost savings. By the same token, Dwyer et al. (1995) explained the educational advantages that arise when supplementing a course with Web-based tools including student-to-student and faculty-to-student communication, enabling student-centred teaching approaches, providing 24 hours-a-day accessibility to course materials, and providing just-in-time methods to assess and evaluate student progress. Other studies (e.g. Oppenheimer, 1997; Kraut et al., 1998) have been dubious about the advantage of computers and online learning over traditional classroom teaching methodology. Phipps and Merisotis (1999), for instance, have questioned the effectiveness of distance education in the light of the evidence that a higher percentage of students participating in a distance learning course tended to drop out before the course was completed compared with students in a conventional classroom.

Despite the presence of some critical, often sceptical, views regarding the pedagogical benefits of e-learning in meeting students' learning needs, the recent emergence of widespread application of computer-based education and training, as well as distance education in many parts of the world is an

indication that academia and industry have welcomed technology as a method of making education and training more effective, flexible, efficient and immediate (Riley and Gallo, 2000).

It is in this context that most of the world regions continue to garner support for the incorporation of technology into the education and training sectors as well as strive to maximise the positive effects of technologies and minimise the weaknesses. However, such a support is scarce in Arab academic circles (Nasser and Abouchedid, 2000). In particular, although Arab educational policymakers are cognisant of the fact that the modernisation process of the Arab world hinges upon introducing technology in education and training, they have done little at widening access to e-learning technologies in educational institutions; hence, widening the digital gap between the Arab region and the global information society.

Statistics on access to computers and ICT applications in the Arab world show a serious digital divide between Arab countries and the developed world. *The Arab Human Development Report* (UNDP, 2002) showed that the Arab region, with 5 per cent of the world's people, has only 0.5 per cent of Internet users. In addition, the Arab Region Internet and Telecom (2001) summit held in Muscat (Oman) in 2001 indicated that Internet penetration in the Arab region is as low as 2.2 per cent, i.e. less than half the world average of 5.2 per cent. These figures underscore the wide disconnect between Arab society as a whole and ICT.

Access to e-learning technologies in education is no exception in this context. Social barriers to the use of technology in education are part of that disconnect. According to the *Arab Human Development Report* (UNDP, 2002), the chief barriers to access to technology in educational institutions are illiteracy and educational access, as reflected in the low school enrolment ratios and average years of schooling. For example, illiteracy in the Arab states is still a persistent problem, where the number of illiterate people at the age of 15 and above is 65 million out of a total population of about 280 million; two thirds of them are women (*United Nations Report*, 2002, cited in

The Middle East Media Research Institute, 2002, p. 1). In addition, the prevalent economic stagnation, together with the intermittent waves of military confrontations in the Arab region, diminishes the prospects of vigorous entry into an increasingly growing global information society, i.e. global knowledge. Against this backdrop, the League of Arab States (LAS) prepared a Draft Declaration of Principles (2003), endorsing ICT in education and training. On e-learning, the Declaration promulgated that:

> E-learning should contribute to achieving the elimination of illiteracy, universal primary education world-wide through better delivery of education and better training of teachers, and to offering improved conditions for lifelong learning, encompassing people that are outside the "normal" education process, and for improving professional skills (The LAS, 2003, p. 2).

The above declaration has failed to indicate which institutions will be vested with the responsibility of funding and managing e-learning as well as constructing its infrastructure as functional requisites for e-learning content development and application of concomitant styles of pedagogy in education. In practice, attempts that aimed at promoting e-learning in many parts of the Arab world have resulted in the establishment of the Arab Open University (AOU) in 2000 with five branches in Kuwait, Lebanon, Egypt, Bahrain and Jordan. The aims of the AOU are:

- to ensure quality distance education;
- to upgrade teachers;
- to democratise education; and
- to prepare students for the workplace (AOU, 2002).

Again, the potential key role of the AOU in the development of human resources in the Arab region is obstructed by the lack of policies recognising e-learning and distance education degrees. In Lebanon, for instance, Legislative Decree 3257 authorised the establishment of the Open University with no regulatory policies that bestow accreditation to distant education or e-learning degrees.

The perfunctory policy approach towards e-learning in the Arab states has further dissuaded students from enrolling in distance education and e-learning programmes offered by European, Australian and North American

universities. At best, the limited introduction of e-learning in many educational institutions in Lebanon as well as in many parts of the Arab region, such as the Blackboard, is seen by the authors of the present study as a jump on the bandwagon of technology attempt, with little preparation and planning for the long-term strategic uses of e-learning in the education and training sectors. Unfortunately, to misjudge the utility of e-learning as the next potential system for higher education in the Arab world is a great loss to further symmetrical development that bridges the existing societal, economic, and cultural gaps between Arabs and the global information society.

In the opinion of the researchers of the present study, the dissemination of global knowledge rests with the role of educational institutions in building up a vital bridge to a more inclusive, communicating and equitable world society in which illiteracy, wars and poverty are redressed. This opinion is also shared by the personal experience of a reporter who visited a United Nations Development Programme (UNDP)-supported ICT youth training camp in South Lebanon following the Israeli withdrawal from the area. In her words:

> A crowd of young people ran out to greet me, eager to show off their computer skills. Here, in the midst of blight and dissolution, these youngsters were shaking off the dust of occupation by using ICT to link to a new age. ICT was their passport to a more hopeful world. More important still, they saw it as a tool to rally them and help repair the fabric of their torn society. That was when I realised that this technology, in and of itself, is not simply an end; it can be the means for widening choices and potentials in a globalised world and for bringing people together in the face of challenge (Hunaidi, 2002, p. 2).

E-learning, therefore, is seen as the building block that supports the structure of modernisation in the Arab region. Although we believe that educational institutions should be the chief proponents of e-learning, there are several limitations that impede their role in implementing e-learning. These limitations are mainly financial, pedagogical, and attitudinal. At the financial level, Internet access prices constitute a main barrier to Internet penetration into the Arab region. For instance, telephone usage tariffs in many parts of the Arab world constitute a significant portion of the overall

Internet access charges, which are expensive; hence using the Internet as an e-learning tool is limited by high telephone tariffs. In addition, in a study on higher education and the labour market in Lebanon, Abouchedid (2003) found that only 24.3 per cent of college graduates have personal computers at home, with limited connection to the Internet. From another perspective, the lack of Arabic content and relevant applications also limits the access to the Internet to those who know limited English or French. Moreover, concern about access to sensitive political content has, in some Arab countries, restricted the provision of international Internet connectivity to one provider; hence causing a destructive effect on pricing and quality because of a lack of competition.

Furthermore, there are a number of attitudinal limitations that impede the integration of e-learning tools and styles of pedagogy into teaching in educational institutions. For instance, educational decision-makers may fear that e-learning would abruptly shift traditional education into a new pedagogical venture where teachers and policymakers are not adequately familiarised with its objectives, content and learning outcomes (Nasser and Abouchedid, 2001). Second, many decision-makers consider that the implementation of e-learning programmes in educational institutions may result in an abrupt change in both content and styles of pedagogy which educational decision-makers cannot currently accommodate due to the near absence of plans for a smooth transition from traditional education to e-learning. Third, many decision-makers also contend that e-learning might stamp out the platform from which a deliberate academic discourse takes place (Mathews, 1999), fearing that universities will become "no lecture" institutions. These concerns hinder the embodiment of e-learning programmes and related teaching strategies in educational institutions.

In fact, the enormous techno-pedagogical benefits of e-learning should be entrenched in the education policy-making process in Arab states. In tandem with the literature of e-learning (e.g. O'Malley, and McCraw, 1999; Mathews, 1999; Tam, 1999), a critical factor in considering the implementation of technology

in any training or academic programme is to establish a vision. Such a vision cannot be envisaged without understanding the perceptions of teachers who are the key players in curriculum development and evaluation. In this context, the present study sought to provide faculty members with the opportunity to share their experiences with others and also to understand their expectations of teaching college courses on the Web. In particular, the study focused on faculty members' attitudes towards e-learning, since:

- their attitudes are effective in inducing curricula change (McLaughlin, 1990) and represent a "guiding stick" or task force in the planning procedure for e-learning and distance education (Becker, 1994; Tobin *et al.*, 1994);
- teachers' attitudes (faculty members in our case) are major determinants for designing and developing e-learning content material (Schuttloffel, 1998).

Overall, not only are teachers' knowledge and skills needed for designing and managing e-learning courses, but also their perceptions of and attitudes to the use of technologies for the purpose of education (Wenzel, 1998; Tobin *et al.* 1994). Overall, this paper seeks to investigate dimensions of e-learning that we believed to be perceived by faculty members as providing advantages over the traditional classroom.

Although the topic of e-learning has been subjected to significant research in many Western countries over the last two decades, there is no a priori reason to conclude that findings from these countries may be applicable to other regions. Nor is there any reason to suggest that findings from Lebanon are not related more broadly. Rather, data from case studies in the Arab world present an incremental contribution to the developing literature on e-learning. This study aims to make such a contribution. In addition, if the present study yields similar results to those generated from Western samples, then confidence in the generalisability of Western studies will be augmented. Hence, in contributing to the body of e-learning research, this study examines full-time faculty members'

attitudes towards three exploratory dimensions of e-learning. These are:

(1) interest in e-learning;
(2) the pedagogical benefits generated from it; and
(3) its effectiveness in the teaching/learning process.

In concert with the objectives of the study, the following research questions will be explored:

RQ1. What attitudes do faculty members have towards e-learning in terms of their interest in getting involved in it, the benefits generated from e-learning, and the efficiency of e-learning in the teaching/learning process?

RQ2. In concert with previous reports which argued that women are under-represented in the technological domain in the Arab region, are there significant differences between male and female faculty members in their mean rankings of the interest, benefit, and effectiveness of e-learning item-dimensions?

RQ3. How would daily users of technology differ from their occasional user counterparts?

Method

Sample

A representative sample of 294 faculty members was selected from six faculties in a private university in Lebanon that follows the US credit-system of education. In terms of gender, 207 (73.7 per cent) were males and 74 (25 per cent) were females. The distribution of the sample across the six faculties at the university was as follows: 15 (5.2 per cent) from the Faculty of Political Sciences; 75 (25.8 per cent) from the Faculty of Humanities; 42 (14.3 per cent) from the Faculty of Engineering; 41 (14.3 per cent) from the Faculty of Arts and Design; 44 (14.1 per cent) from the Faculty of Natural and Applied Sciences; and 74 (25.5 per cent) from the Faculty of Business Administration. In addition, 172 faculty members (59.2 per cent) were PhD holders, 109 (37.6 per cent) had Master's degrees and nine (4.7 per cent) had BA/BS degrees.

Questionnaire

Three main sources shaped the content of the questionnaire used in the present study. The first source came from reviewing the theoretical literature on e-learning and distant education (e.g. Gordon *et al.*, 2001; Moore, 1993; Keegan, 1980). In addition, we utilised online excerpts on attitudes to e-learning displayed on the Internet (e.g. Joint Campaign for Learning, 2002). The third source came from the authors' personal experiences in dealing with administrative issues related to the implementation of e-learning at the university, such as its administration, electronic course content, and educational objectives. Informal discussions with colleagues interested in e-learning at the university were also instrumental in the formulation of the questionnaire items.

The questionnaire was laid out in five sections. The first section sought to obtain general background information such as respondents' gender, academic degrees, and faculty affiliation. The second section requested respondents to rate their familiarity with computer technology and the frequency of use. The third section comprised ten items on respondents' interest in using e-learning methods and techniques in the classroom, such as Web-based teaching, using technology in the classroom, giving online exams and displaying the course syllabus on the Net. A five-point Likert scale was used ranging from "not interested at all" to "very interested". The fourth section had ten items on the benefits of e-learning such as "e-learning will make teaching and research at the university easier" and "e-learning will help faculty members develop new technical skills for teaching", along a five-point scale ranging from "very low" to "very high". The fifth section had 12 items on the degree of effectiveness of e-learning in the teaching/learning process such as "e-learning is not as effective as face-to-face teaching" and "I do not know enough about the opportunities for e-learning". Items on this scale ranged from low agreements to high agreements. The consensual validity of the questionnaire items came from open-ended interviews and panel discussions involving college students (n = 7), who teach in private schools in the vicinity of the university under study. Students were asked by one of the researchers in the present study to rate the clarity, appropriateness, and applicability of the questionnaire items. Preliminary results showed that the majority of students rated the questionnaire as straightforward, simple, and apparently valid. Although students might not have adequate experience to judge the face validity of the questionnaire, their positive assessment gave us confidence that the questionnaire items, which were shaped by an amalgam of the theoretical literature, informal interviews with colleagues and Internet resources, would be useful in an exploratory study like the present one. In order to ensure the reliability of the scales used in the study, Cronbach alpha reliability coefficient was employed. This indicates how well a set of items (or variables) measures a single uni-dimensional construct (Cronbach, 1951). When data have a multidimensional structure, Cronbach's alpha will be low, i.e. less than 0.70 (Hatcher, 1994, p. 328). A careful examination of reliability measures employed in the present study immediately attested to the high internal consistency and congruence with reality of the items constructed with Cronbach's α = 0.87 for the interest in using e-learning, α = 0.91 for the benefits generated from it and α = 0.73 for items on the effectiveness of e-learning in teaching and learning.

Procedure

The university provost and vice-president for academic affairs forwarded the questionnaire to all full-time faculty members through faculty deans. In turn, deans of faculties administered the questionnaires to their faculty members in the spirit of cooperation. The high return rate of questionnaires (95.6 per cent) immediately attested to faculty members' interest in the issue of e-learning in education.

Limitations of the study

A number of study features limit the generalisability of our results. First, our sample is not representative of all faculty members in higher educational institutions in Lebanon and the Arab region. In addition, owing to the absence of e-learning attitudinal surveys in the Arab region, the present quantitative findings

are limited to the institution where the sample was obtained. These limitations, however, did not prevent the authors from tackling issues of access and flexibility of e-learning in Lebanon and the Arab region. Second, the relation of self-reported frequency of using the computer amongst faculty members and their actual computer skills was not measured in an experimental design setting; faculty members self-reported familiarity with computer programs and the degree to which they use them is presented. From another perspective, we faced difficulty in adopting an agreed terminology for describing open, flexible and distributed learning activities due to the presence of substantial, often-overlapping vocabularies in the literature, such as Web-based learning, mobile learning (or m-learning), off-site learning, remote learning, Web-based instruction (WBI), nomadic learning, online learning, e-education etc. In the present study, the term e-learning is employed, since it is the most frequently used terminology that connotes flexible and electronic learning in Lebanon's educational arena.

Analyses and findings

The marginal distribution of responses showed that 245 (83.3 per cent) of faculty members were daily users of computers, including Internet facilities as opposed to 45 (15.3 per cent) who self-rated themselves as occasional users. In addition, 84.4 per cent of respondents registered familiarity with PC Windows and the rest reported using Linux, Unix and Mac platforms. Thus, the majority of faculty members were daily users of computers as well as being familiar with widely used software.

The semantic differential items in the questionnaire presented direct measures of attitudes towards e-learning. Items on the interest in e-learning dimension comprised several components related to teaching and research. A cursory look into the frequencies and percentages of responses shows faculty members' interest in adopting e-learning in teaching and research at a significant χ^2, i.e. the attitudes among respondents reached the 99.9 per cent level of certainty. These faculty

members disagreed with administering exams online (see Table I).

All in all, these attitudes welcoming e-learning, in which positive attitudes have significantly overweighted negative ones, as shown in the χ^2 statistic, constitute a benchmark upon which decision-makers can rationalise the implementation of e-learning in the various university faculties. At times, e-learning sceptics compared it with a mass-production assembly line process, where a division of labour between educators and communications specialists replaces the more craft-oriented approach of face-to-face education (Peters, 1993 in Harry et al., 1999).

In order to verify further faculty member attitudes towards their interest in e-learning, we explored the possible benefits provided by e-learning. Table II presents the frequencies and percentages of responses pertaining to the techno-pedagogical benefits of e-learning. Results show high agreements concerning the benefits of e-learning in both teaching and research. However, faculty members expressed certain reservations regarding the future implementation of e-learning at the university; for example: "One day the university will receive all its learning provisions through e-learning", "e-learning will help faculty members develop better teamwork and inter-personal skills" and "Implementing e-learning at the university will make faculty members flock to sophisticated technologies in teaching". These attitudes reflect faculty members' lack of trust in one another's ability in using advanced technologies in teaching as well as in building up teamwork spirit in the workplace.

In order to probe further significant differences between males and females in their mean ranking of the interest and benefit item-scales, a Kruskal-Wallis test, which is an independent group comparison test of sampled data which are not normally distributed, was employed in the analysis. No significant differences were found between males and females on the interest scale except on four items. To substantiate, females registered a lower mean rank (124.1) in Web teaching than males (144.9) with $p < 0.05$, i.e. did not favour Web teaching and were also not interested compared with males in using technology in the

Table I How interested are you in e-learning?

	1		2		3		4		5		df	χ^2
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)		
1. Web-based teaching	19	6.6	50	17.2	36	12.5	101	34.9	83	28.8	4	79.6[*]
2. Using technology in the classroom	4	1.4	30	10.4	16	5.4	79	27	163	5.8	4	292.9[*]
3. Designing electronic courses in your area of specialty	21	7.3	66	22.7	19	6.4	72	24.8	118	38.8	4	110.7[*]
4. Using electronic articles and books as teaching references	13	4.6	42	14.6	9	3.1	84	29.5	138	48.2	4	210.9[*]
5. Giving online examinations	82	28	61	20.7	15	5.3	76	25.9	59	20.2	4	45.4[*]
6. Holding electronic conferences	26	8.9	42	14.4	28	9.4	97	32.9	102	34.5	4	94.5[*]
7. Receiving advanced training in e-learning	21	7.1	25	8.6	29	9.8	76	25.7	144	48.8	4	192.7[*]
8. Conducting online search	4	1.4	26	8.9	9	3.2	75	25.5	178	61	4	359.4[*]
9. Publishing in electronic journals	16	5.4	54	18.5	23	7.9	73	24.9	126	43.2	4	130.5[*]
10. Displaying your course syllabus on the Internet	25	8.6	51	17.4	28	9.8	75	25.8	111	38.3	4	84.6[*]

Notes: 1 = not interested at all; 2 = not Interested; 3 = neutral; 4 = interested; 5 = very Interested; [*]$p < 0.01$

Table II Benefits generated from e-learning

	1		2		3		4		5		df	χ^2
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)		
1. E-learning will bring huge advances to the university capacity in teaching and researching	21	7.2	42	14.4	72	24.6	79	26.7	80	27.1	4	49.1[*]
2. One day the university will receive all its learning provisions through e-learning	46	15.5	85	29	106	36	34	11.7	23	7.8	4	92.3[*]
3. Through e-learning, learning/teaching can be accessed at the university, reducing the time spent "off the job"	29	10.2	59	20.7	98	34.5	50	17.6	49	17.1	4	50.2[*]
4. E-learning will help faculty members disseminate information more rapidly than through traditional approaches of teaching	24	8.3	44	15	71	24	78	26.5	77	26.3	4	37.7[*]
5. E-learning will help faculty members develop new technical skills for teaching	21	7.1	16	5.4	54	18.3	121	41.2	82	27.9	4	133.1[*]
6. E-learning will help faculty members develop original ideas/creative teaching	18	6.1	29	9.7	78	26.4	110	37.5	60	20.3	4	101.9[*]
7. E-learning will help faculty members develop better teamwork and inter-personal skills	37	12.6	79	26.7	90	30.7	50	16.8	39	13.2	4	41.5[*]
8. E-learning will make teaching and research at the university easier	23	7.9	52	17.6	76	25.7	84	28.5	60	20.3	4	42.6[*]
9. The university should not consider e-learning, because profit is the key motivator for most Web initiatives	14	4.8	22	7.4	128	43.3	56	19.1	75	25.4	4	147.5[*]
10. Implementing e-learning at the university will make faculty members flock to sophisticated technologies in teaching	32	11.8	44	15.1	103	35.5	62	21.4	47	16.2	4	50.7[*]

Notes: 1 = very low; 2 = low; 3 = neutral; 4 = high; 5 = very high; [*]$p < 0.01$

classroom as well as in displaying their course syllabus on the Net. Females, however, were significantly ($p < 0.05$) more interested than their male counterparts in receiving e-learning training. Turning to the benefits of e-learning, males documented significantly higher agreements than females on "One day the university will receive all its learning provisions through e-learning" ($\chi^2 = 4.59$; df = 1; $p < 0.05$), and were also more optimistic than females in accessing e-learning at the university ($\chi^2 = 12.1$; df = 1; $p < 0.01$).

Furthermore, males registered a significantly higher mean ranking than their female counterparts in their belief that e-learning will help faculty members disseminate information more rapidly through e-learning than through traditional approaches to learning ($\chi^2 = 30.1$;

df = 1; $p < 0.01$), meaning that obtaining this result by chance is less than 0.01 per cent.

Males have also registered favourable views on the benefits of e-learning by agreeing more than females with "e-learning will make teaching easier" ($\chi^2 = 5.47$; df = 1; $p < 0.05$) and "Implementing e-learning at the university will make faculty members flock to sophisticated technologies in teaching" ($\chi^2 = 5.35$; df = 1; $p < 0.05$), while females agreed more than males that the university should not consider e-learning because profit is the key motivator for most Web initiatives ($\chi^2 = 9.78$; df = 1; $p < 0.05$). From another perspective, the Kruskal-Wallis test showed that daily users were significantly more interested in using technology in teaching and research than their occasional user counterparts. Table III presents mean ranking differences on the interest and benefit item-dimensions between daily and occasional users of computers.

As for the benefit dimension, no significant differences were found between daily and occasional users except on "e-learning will make teaching easier" (see item 8 in Table II), in which occasional users registered higher agreements than daily users. In addition, Kruskal-Wallis showed noteworthy significant differences amongst the six faculties at the university on their mean ranking of the interest and benefit item-scales. For instance, the Faculty of Political Sciences and Public Administration alongside the Faculty of Business Administration and Economics had the highest agreements on the interest and benefit item-scales than the rest of Faculties at $p < 0.01$.

Turning to the effectiveness of e-learning dimension, Table IV reports faculty member agreement with the effectiveness of e-learning in teaching. First, due to lack of e-learning content material at the university, the majority of respondents were neutral in their attitudes towards "e-learning materials do not meet the needs of the courses I teach" and agreed that "e-learning is not yet developed to replace other forms of teaching at the university".

In addition, significant variations were found on item 4 in Table IV "I do not know enough about the opportunities for e-learning" with the majority of respondents significantly registering a neutral response on the Likert scale. Furthermore, the majority of faculty members documented agreements with item 5 in Table IV "Computer-based learning is not as effective as face-to-face teaching" and disagreed with "e-learning adds little to my knowledge of the courses I teach"; hence recognising e-learning as a tool for teaching and learning. This finding was further verified by faculty member disagreements with "e-learning methods of teaching are limited". As for students, faculty members expressed reservation regarding "Our students do not have adequate skills to engage in e-learning", as is evident in the percentage of their neutral responses, which were the highest (28.2 per cent) among the other forced-choices in the continuous five-point Likert scale. Turning to gender and frequency of using computers, significant χ^2 variations were found between males and females as well as between daily and occasional users of computers on their mean ranking of the effectiveness of e-learning dimension (see Table V).

Table III *K*-independent Kruskall-Wallis test for daily and occasional users' mean rankings of interest in e-learning

	Users	*n*	Mean ranking	df	χ^2
Web-based teaching	Daily	245	148.5	1	7.02[*]
	Occasional	41	113.1		
Using technology in the classroom	Daily	247	149.1	1	6.89[*]
	Occasional	41	116.3		
Holding electronic conferences	Daily	246	150.4	1	6.71[**]
	Occasional	41	115.4		
Conducting online search	Daily	247	150.6	1	12.5[**]
	Occasional	41	107.7		
Publishing in electronic journals	Daily	246	148.9	1	6.82[*]
	Occasional	41	114.4		

Notes: [*] $p < 0.05$; [**] $p < 0.01$

Table IV Effects of e-learning

	1 n	1 (%)	2 n	2 (%)	3 n	3 (%)	4 n	4 (%)	5 n	5 (%)	df	χ^2
1. E-learning adds little to traditional education	85	28.7	82	28	71	24.3	28	9.7	27	9.3	4	60.5**
2. E-learning materials do not meet the needs of the courses I teach	67	23	67	23	87	29.9	34	11.8	35	12.2	4	32.4**
3. E-learning is not yet developed to replace other forms of teaching	25	8.8	59	20.8	79	28.1	57	19.4	62	22.1	4	28.7**
4. I do not know enough about the opportunities for e-learning	60	20.4	67	22.8	80	27.3	49	16.7	38	12.9	4	21.3**
5. Computer-based learning is not as effective as face-to-face teaching	43	15.4	22	7.9	66	22.5	56	19.9	93	33.2	4	53.5**
6. E-learning adds little to my knowledge of the courses I teach	69	34	95	33.4	54	19.1	42	14.6	25	8.9	4	52.6**
7. E-learning is not conducive to proper evaluation of students	30	13.7	72	24.6	115	39	43	14.9	31	10.7	4	93.07**
8. Our students do not have adequate skills to engage in e-learning	40	13.6	63	21.7	82	28.2	52	17.7	55	18.7	4	21.8*
9. Overloads prevent faculties from using e-learning	72	25.6	68	23.9	89	31.3	27	9.6	27	9.6	4	61.9**
10. E-learning methods of teaching are limited	24	8.4	100	34.9	103	36	26	9.2	33	11.5	4	108.9**
11. E-learning will not affect my teaching skills and knowledge of the subjects I teach	64	21.9	52	17.9	68	23.3	35	12	72	24.8	4	15.7**

Notes: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree; *$p < 0.05$; **$p < 0.01$;

As shown in Table V, males have significantly registered more favourable attitudes towards the effectiveness of e-learning than their female counterparts with the exception of items 1, 8, 9, 10 and 11, which did not yield significant differences between males and females. These results replicated much of what has been reported in the benefit and interest dimensions in that males were more positive than females in their perceptions of e-learning. Further analyses yielded significant attitudinal differences between daily and occasional computer users

Table V Effects of e-learning by gender and computer users

	Gender	n	Rank	χ^2	Users	n	Rank	χ^2
1. E-learning adds little to traditional education	Male	202	135.9	0.043	Daily	248	150.6	5.47*
	Female	70	138.2		Occasional	43	119.1	
2. E-learning materials do not meet the needs of the courses I teach	Male	198	124.3	14.3**	Daily	243	146.1	1.69
	Female	70	163.8		Occasional	43	128.7	
3. E-learning is not yet developed to replace other forms of teaching	Male	195	126.4	4.2*	Daily	237	144.1	3.24
	Female	68	148		Occasional	43	120.5	
4. I do not know enough about the opportunities for e-learning	Male	202	129.9	5.64*	Daily	248	143.6	1.43
	Female	70	155.2		Occasional	43	159.8	
5. Computer-based learning is not as effective as face-to-face teaching	Male	191	120.5	12.2**	Daily	234	141.1	1.14
	Female	68	156.4		Occasional	43	127.3	
6. E-learning adds little to my knowledge of the courses I teach	Male	197	136.8	4.32*	Daily	234	141.1	1.63
	Female	65	115.1		Occasional	43	120.5	
7. E-learning is not conducive to proper evaluation of students	Male	202	129.2	7.31*	Daily	245	144.4	0.022*
	Female	70	157.6		Occasional	43	144.9	
8. Our students do not have skills to engage in e-learning	Male	200	138.7	1.41	Daily	246	149.8	5.74*
	Female	70	126.1		Occasional	43	117.5	
9. Overloads prevent faculties from using e-learning	Male	191	130.8	0.003	Daily	239	139.2	0.176
	Female	70	131.4		Occasional	40	144.7	
10. E-learning methods of teaching are limited	Male	196	133.1	0.053	Daily	243	146	4.76*
	Female	68	130.7		Occasional	40	117.1	
11. E-learning will not affect teaching skills and knowledge of the subjects I teach	Male	202	132.2	0.122	Daily	245	146.3	0.864
	Female	70	148.7		Occasional	43	133.8	

Notes: *$p < 0.05$; **$p < 0.01$

on four items of the effectiveness of e-learning scale. Daily users significantly registered more favourable views on "e-learning adds little to traditional education", "e-learning is not conducive to proper evaluation of students", "Our students do not have the necessary skills to engage in e-learning" and "e-learning methods of teaching are limited".

Discussion

Given the poor perception of e-learning in many parts of the Arab region (Nasser and Abouchedid, 2000), this study has emphasised the need for e-learning as a mechanism for enabling Arab citizens, irrespective of age, gender, employment and geographic location, to gain access to higher education and also to ensure quality education in a region that suffers from corrosive wars, poverty, illiteracy and economic dissolution. In particular, this study aimed to expand the educational role of the university in serving the community through the delivery of flexible and easily accessible electronic courses to students alongside the provision of e-training to teachers. In addition, given the limitations of e-learning in the Arab region described earlier, the present study focused on faculty members in order to understand their expectations of teaching college courses on the Web and also to provide data on e-learning prior to adoption.

As the Lebanese economy has changed from an agrarian mode to a service, tourism and banking mode (Abouchedid, 2003), through the information age and now globalisation, e-learning has become essential for the success of individuals and organisations (Czerniak *et al.*, 1999). Faculty members have recognised this necessity, albeit with attitudinal differences based on gender, faculty affiliation, and frequency of using the computer. A cursory look into the frequencies and percentages of responses (see Table I) immediately attests to faculty member interest in adopting e-learning in their teaching and research, whilst presenting a cautious view on giving online examinations owing to lack of confidence in the Internet security system at the university, which is not protected. Furthermore, faculty members' recognition of e-learning as an effective tool for

meeting a globally challenging and exponentially growing information economy (Sherry and Morse, 1995) represents an attitudinal departure from the hesitant educational policy-making process in the Arab region, which often adopts a "traditionally" demarcated, reserved view concerning the implementation of e-learning and distance education (Nasser and Abouchedid, 2000). Broadly, this finding coalesces with many studies conducted in the West, which showed a significant increase in support for the implementation of e-learning and concomitant styles of pedagogy in the education and training sectors.

Turning to the second research question, a series of *K*-independent Kruskal-Wallis tests showed significant statistical differences between males and females as well as between daily and occasional computer users in their attitudes towards the three dimensions of e-learning established in the study. Such differences are expected to widen among the less educated people in Arab states who are under-represented in the technological domain, unlike our sample of faculty members who enjoy considerably higher educational and socio-economic standards that facilitate their access to computers and technology. In addition, gender differences showed that males documented more favourable attitudes than females towards the interest in, benefit and effectiveness of e-learning dimensions. In fact, differences in sampling techniques, questionnaire items and measurement scales between this study and those conducted in the West prevented quantitative cross-national comparisons. However, from a qualitative perspective, the findings concur with previous studies conducted in the West, which show that males have more favourable attitudes towards computers and e-learning than females (Bedagliacco, 1990; Shashaani, 1993; O'Malley and McCraw, 1999), who may exhibit what is termed an e-learning anxiety. This anxiety, however, was tinged with a remarkable readiness for receiving training. Herein surfaces the importance of training as a powerful route for remedying computer and e-learning anxieties. No other explanation can be provided to this gender-attitudinal difference, since the university provides faculty members with equal

opportunities to access computers and the Internet. More specifically, these findings depart from the Arab Region and Telecom Summit report in 2001, which pointed out that women Internet users are under-represented in the Arab region due to the discrepancy in computer literacy between males and females. On the contrary, our statistics showed that 82.1 per cent of males as well as 83.8 per cent of females were daily users of and familiar with computers; hence, female under-representation in using computers seems less prominent in higher educational institutions that adopt and enact equal opportunity policies.

Furthermore, the positive attitudes towards e-learning among daily computer users provides incremental evidence to previous studies, which indicate that computer-experienced individuals are more likely to document favourable attitudes to the use of computers and related Web-based programmes than inexperienced individuals (e.g. Charlton and Birkett, 1995). Thus, if favourable attitudes to the use of e-learning in the teaching/learning process are a function of prior experience, then e-learning training can be a modifiable strategy for altering negative attitudes into more positive ones. Therefore, it would seem vital to provide training opportunities to faculty members, particularly to occasional computer users, in order to familiarise them with the methodological styles of e-learning, to help dissipate established e-learning stereotypes and to alleviate the burden of computer anxieties on potential e-teachers. Another concern that emerged in the present study was faculty members' lack of trust in the ability of e-learning to enhance teamwork. This finding suggests that positive attitudes towards e-learning are downgraded by inter-group rivalries in organisations, when individuals exhibit an attitude of mistrust in one another's ability to engage collaboratively in educational planning and innovation. Thus, future research on attitudes towards e-learning should take into consideration not only the assessment of views on e-learning, but also the psychological and social aspects relating to inter-group attitudes and relationships in organisations, in particular during the process of change (Roger, 1995, p. 131).

Limitations of implementing e-learning

The present study has shown that the vast majority of faculty members were favourable to e-learning. However, these attitudes are thwarted by the actual academic and administrative conditions of the university under study. First, the university council, which is the highest academic decision-making body at the university, has not yet taken decisive action regarding the implementation of e-learning. The reluctance in deciding on whether or not the university should adopt e-learning is due, partly at least, to the lack of familiarity with e-learning techniques and methods among deans and chairpersons. This lack of familiarity was admitted by a number of deans during a meeting on online registration, in which they confessed their lack of "know-how" in managing and administrating online registration. Second, the university does not have regulatory policies that facilitate the use of e-learning in education and training. Even the existing Blackboard, which is still at the embryonic stage of development, is reactive more than proactive. Only 7.3 per cent of faculty members have employed it in teaching due to bandwidth limitations, lack of graphics and shortage of student PC access at home and on campus.

The positive attitude of faculty members currently contrasts with the grim reality of the administrative inactivity of the university, which has failed so far to develop a clear and effective e-learning policy with a plan of action that is put in place for implementation. From the results of the present study, it is inconceivable that achievements in e-learning at the university and broadly in many Arab higher educational institutions will have much room for progress without involving faculty members and education decision-makers to develop a common vision, objectives, priorities, strategies and plans for action to speed up the move towards the development of e-learning. Although there is an e-learning revolution taking place in educational institutions world-wide, Lebanon and the Arab region are still far behind. Therefore, in order to consider e-learning for the development of Lebanon and its surrounding Arab region, a change in the mindset of the policy-making process towards the management of education, curricula design and quality education is required.

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