

Jordanian physics students' utilization of online instruction and their attitudes towards it

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ABSTRACT

Given the limited number of currently available resources in Jordan, the ministry of Education is implementing a newly developed online physics curriculum; this is being trialed in a number of experimental public schools. This investment is still regarded with some skepticism among both students and teachers.

This research seeks to redress the skepticism by examining the instructions of online physics curriculum in one of the experimental public schools. Eleventh grade students in their classroom were observed and surveyed. Participants were also interviewed to establish the current use of online curricula in schools in Jordan. The research outlines student's responses to questions about their own learning and their assessment of the value of online curricula in helping them to manage their studies. The findings of this study revealed that student collaboration, reflective thinking, class management, active learning, and technology competence were student's negative online learning experiences. The students' negative experiences were caused by lack of cognitive, social and teaching activities. The findings can lead to further insights about how Jordanian teachers can link their efforts to student perceptions of the many initiatives they undertake, especially in using online technology for teaching and learning.

Keywords: *Online Curricula; Developing Countries; Online Education; Online Instruction*

INTRODUCTION

The use of online Instruction, commonly understood as learning facilitated online through network technologies (Garrison & Anderson, 2003), has triggered a great deal of interest in developing countries. In Jordan, the Ministry of Education (MoE) is the governing body for the public education sector. In the past few years, it has been coping with changing approaches to knowledge acquisition through the use of information communication technologies (ICT) such as computers, Internet and ICT; an increase in the availability of computer hardware and software and internet in all schools in all levels in Jordan has undoubtedly been evident.

Furthermore, the Ministry of Education (MoE) in Jordan had preoccupied with major reforms in the educational system. Such reforms centered on structuring the educational system to provide quality online learning (MoE, 2005); computers in sizable numbers are introduced, more and more schools are getting wired and in-service teachers' training programs (i.e., ICDL, Intel, Word links, Eduwave Module, ICT) are established for the purposes of assisting students to learn efficiently and effectively, increasing learning opportunities, and coming to terms with online education (Ajlouni, 2005; MoE, 2003).

New curricula for many subject areas for different grade levels are being redeveloped. Experimental schools (Reiadih) for some online courses had been established. These schools are being culminated its' e-learning projects with the curriculum reform movement such activity is aimed towards the integration of online technology in education. Very few teachers or students at schools will argue over the desirability for improving their online instructional practices. Teacher's

and student's viewpoints, perceptions and experience in the transformation process due to the recent integration of ICT in schools are usually underestimated or less recognized. This lack of recognition is based on the assumption that teachers and students have no major input in this concern, and are expected to handle online instruction successfully. However, there are two major aspects to the developments in the use of online curricula at schools in Jordan. One is concerned with the enhancement of the quality of teaching/learning such as basic communication and the provision of information to students, the processing of assessed work, conduct of short answer tests (MoE, 2004). The other aspect, the case for using online to deliver or part deliver the academic components of a course are harder to justify.

Successful utilization of online course demands that individual students take the responsibility to be self-motivated and self-regulated. Teachers and curriculum planers' clear understanding the criteria of the good quality online course (i.e., content, pedagogy, motivation, feedback, coordination/organization, usability, assistant and flexibility) may place online learning projects in the right direction (Kearsy, 2000). Despite the exhortations of the ministry of Education about the importance of online learning or the need to respond to knowledge economy by providing online education, the questions of exactly how Jordanian students utilizing online physics curriculum and what is their attitudes towards online learning are sometimes hard to answer.

Indeed, it is clearly evident that large expenditures and great efforts are being made by the Ministry of Education in Jordan to transform investments in information communication technology into a successfully productive experience in education. A great deal of the Ministry of Education theoretical reports portrays such experience as a rewarding one. Theoretical reports as reviewed by the researcher are by no means a conclusive proof of successfully fruitful investment of school e-learning projects. As University professor of "Educational Technology" teaching computer education courses, the researcher had frustrating experiences with large number of students enrolled in such courses. Though repeated observations of those freshman students in computer labs, the researcher noted that in many cases students lacked the basic computer literacy skills and competences. Online learning implementation in Jordanian schools may not be as portrayed.

Certainly, incomplete or unrewarding investment in schools' e-learning projects does not come from itself; there may be some inhibiting factors accompanying the process of school online curricula that hinder or limit the success of online education in Jordanian schools. To put things in perspective, the researcher feels that Jordanian schools have not risen fully to e-learning in education challenge. Great efforts are still needed to manage issues influencing the online curricula in Jordanian schools. We now have a shift in learning, unlike traditional face to face instruction and learning, attention needs to be paid to online teaching and learning. Believing that schools' reform should start from inside, the researcher herald that exploring the learning experiences of Jordanian students in online physics course and their attitudes towards learning helps pinpoint such issues associated with barrier to effective online curricula in Jordanian schools.

Problem, Purpose, and Significant of the Study

The new curriculum (Physics for eleventh grade) was put into actual use in public schools in Jordan. It addresses Jordanian pupils at approximately 17 years old, who will be exposed to the experimental online physics curriculum, while they are still sensitive to the expectation of their traditional face to face curriculum using chalk and blackboard. It has been cleared out that the traditional face to face instruction is an avoidable factor in online learning experiences (Howland & Moore, 2002), and the online learners' perception as well as their roles as traditional learners should be reflected at the same time for the upper mentioned purpose.

Personal communications with the Jordanian community revealed that most Jordanian students prefer the traditional curricula while some others enjoy the online curricula. Their parents are frustrated; they complain that their kids don't do their homework's and that they

This study attempts to ascertain the extent to which Jordanian eleventh grade students utilize online physics curriculum and their attitudes towards it. The study further investigates whether or not a linear relationship exists among these students' attitudes towards and actual use of online instruction in the classroom. More specifically, the present study attempts to answer the following research questions:

1. What are Jordanian eleventh grade students' attitudes towards using online instruction in their classroom?
2. To what extent do these students utilize online instruction in learning physics?
3. Is there a linear relationship between these students' attitudes and their use of online instruction in their classroom?

Limitation of the study

There are several limitations that must be addressed with respect to this study. The sample was limited to students in experimental schools (Reiadiah) in Jordan. Caution should be used when attempting to interpret and generalize the findings. Another limitation is that the number of schools that were included in the study. This study focused on one of the experimental public schools. Caution should be used when attempting to generalize the finding to other schools. The instruments may not be generalizable to all contexts. Rather, they are intended as adaptable guidelines for foreign online learners in all their online experiences to be used selectively and creatively for various online instructions scenarios. There was one type of format utilized to present the online physics course. Caution should be used when attempting to generalize to other online course format.

REVIEW OF RELATED LITERATURE

The role of online curricula in Jordanian classrooms has not been studied; thus a comprehensive body of research has not been established. An International literature review reveal the integration of online learning into a face-to-face courses can have positive effects on learning outcomes (Cf., examples: Housego & Freeman, 2000; Phillips, 2000; Heines, 2000; Aberson et al., 2000; Diochon & Cameron, 2001; Saunders & Klemmif, 2003). These studies mostly have been focused primarily on learning outcomes. In contrast, there have been few investigations that have set out to find out how students feel that online is utilized to support their learning. Literature review has provided two kinds of researchers: those who vouch for the effectiveness of online education, and those who do not advocate using online education. The former (first) group claims that online education can promote students' critical thinking skills, deep learning, collaborative learning, and problem-solving skills (Ascough, 2002; Rosie, 2000; Ronteltap & Eurelings, 2002; Donlevy, 2003; kearsly, 2000). Proponents also argue that online education can encourage nondiscriminatory teaching and learning practices since the teachers and students, as well as students and their classmates typically do not meet face-to-face. Palloff & Pratt (1999) assert that online education presents a bias-free teaching and learning environment for instructors and students.

Several researchers have shown that the instructions that use online curricula are not just time-filling activities but ones with great pedagogical values that can provide lecturers with superior teaching tools. Volery (2000) for example, argues that online methods facilitate more effective

education and offer significant advantages over traditional teaching methods. McClelland (2001) contends that in online Learning environments lecturers can offer constant educational support, as students are able to communicate with classmates and lecturers, visit web sites and view course material regardless of their time and location. Petrides (2002) investigated the effects of using web-based technology as a supplement instruction on the learning of college students enrolled in online class. He reported that despite the finding that learners revealed it was easier to work in collaborative groups in an online course, using web-based technology, they failed to produce successful feed back in the online context as compared to what could typically occur in a structured face-to-face class discussion..

An earlier study conducted by Chizmar and Walber's (1999) on web-based learning environments, reported that students' abilities to freely pick and choose from the menu of diverse learning experiences enabled them to find the approaches that best fit the way they learn when students have to wait for others to read and respond back to their postings or e-mail messages. Thurmond et al. (2002) evaluated students' satisfactions in a web-based learning environment. Their findings revealed that the virtual learning environment including e-mails, computer conferences, chat groups, and online discussions has a greater impact on the students' satisfaction than it has on student's characteristics. Dwyer's (2003) examined the effectiveness of text based internet learning environment. He concluded that the inclusion of visual images in the learning environment can be extremely effective but the inclusion of visual images should be based on specific educational objectives.

Poole (2000) conducted a study to investigate students' participation in a discussion-oriented online course. He found that students experienced convenience because the discussion was conducted on a preferred place and times according them. Previous study showed similar results when Murphy & Collins (1997) found that online learners read and respond to instructor's comments in online discussions at times convenient to them e.g. early morning, late evening discussions.

Song, et al. (2004) investigated the effects of using online course, on 76 graduate students. Their findings revealed that the lack of community' difficult understanding instructional goals, and technical problems were challenges in their online learning experiences. They also found that the design of the online course is one of the helpful components in their online learning. Other helpful components included comfort with online technologies, time management and motivation of the learner.

Wu and Hiltz (2004) investigated the attitudes of 116 students enrolled in two undergraduate courses and one graduate course at the New Jersey Institute of Technology. The three courses were "mixed mode" courses; students had face-to-face class meetings three hours a week, and weekly asynchronous online discussions. The findings revealed that variations among instructors or courses are associated with differences in perceptions of student motivation, enjoyment and learning. They also found that in traditional professor-centered education, the roles of professor and student are regimented; the professor disseminates knowledge, and the student reflects that information.

Despite the favorable views of online education in the preceding studies, the later (second) group argues against the use of online curricula on the grounds that they fail to make a worthwhile contribution to learning. Nick Smith, the chairman of the House of Representatives science subcommittee on basic research stated with deeply concerned about the quality of online learning during a hearing in May of year 2000:

.... Students who take online courses don't interact as much as their peers in traditional courses, and that they may walk away with knowledge but not with an understanding of how to think for themselves (Carnevale, 2000, p. 51)

Some opponents also question the quality of online education since the quality of instructors who teach online courses cannot be guaranteed (Weiger, 1998). They question whether or not online learning can provide the same interaction between instructor-students and students-students as traditional classrooms offered (Roblyer & Ekhaml, 2000).

Vonderwell (2003) conducted a qualitative study to determine students' perceptions of online Learning experiences. He reported that online learning participants experienced a lack of connection with the instructor, especially "one-on-one" relationship with the instructor, delay of immediate feedback from the instructor and, Lack of a sense of online community and the feelings of isolation. Other studies have found similar results. For example, Woods (2002) in his study on the online communication between instructor and learner reported that online learners reported feeling isolated from faculty as well as other learners in the online courses they had taken. Clark (2002) pointed out that online learner must be a constructivist learner. According to Howland & Moore (2002), students who were most positive in their perceptions of online learning were those with attributes consistent with constructivist learners

Utilization, as used in this study, is the extent to which Jordanian students use online education in their classroom. The literature reviewed reveals a dearth of local studies on the use of online curricula. To the best of the present researcher knowledge, the present study is the first inside and outside Jordan to investigate the relationship between students' attitudes toward online curricula and their actual use of online curricula in classroom. An extensive review of previous research failed to reveal any studies which had embarked on a similar investigation. Although the findings of the reviewed foreign research particularly applicable to the Jordanian context, they were instrumental for the researcher's construction of the data collection instruments. A good number of the items of the questionnaire and the other instruments were drawn out from or built according to the previous research reviewed in this section. Thus, this investigation is carried out in understanding Jordanians students' learning process utilizing online physics curriculum in their face to face classroom instruction.

METHODOLOGY

Research Design

The design selected for this research study was quantitative and qualitative in nature using questionnaire, interviews and observation checklist. The researcher uses Reeves & Hedberg's (2003) evaluation criteria to evaluate the online physics course: functionality, usability, appeal, and effectiveness. The researcher also uses Chang & Fisher (2001) evaluation criteria to evaluate the interactions that occur in the online physics learning environment: student collaboration, active learning, reflective thinking, class management, content, and teacher support. This type of multi-dimensional study requires the use of mixed-methods approach to data collection and analysis. According to Paton (1990), "Studies that use only one method are more vulnerable to errors linked to that particular method than studies that use multiple methods in which different types of data provide cross-data validity checks" (p. 18). Therefore, the data from the checklist and the interviews was used to reinforce the validity of the students' responses to the attitudinal questionnaire. The purpose of the checklist and the interview was to obtain the students' point view about their actual use of online learning which could not be elicited by the questionnaire. Thus, the observation checklist and the interview were derived from the content of the questionnaire itself.

Research Instruments

Two types of research instrument have been used in this study (viz., an attitudinal questionnaire, classroom observations and interviews). The quantitative data were collected by means of a 59-item questionnaire intended to elicit Jordanian tenth grade students' perceptions, beliefs and views regarding the utilization of online curricula. The attitudinal instrument was prepared based on previous literature (cf., for example, Lee, 1987; Kim, 1995; Fraser, Fisher & McRobbie, 1996; Tobin, 1998; Lewis, 1999) and the present researcher collective experiences. The students were asked to provide their own judgments on the actual use or lack thereof online learning in their classrooms on a nominal scale ranging from 1 (strongly disagree) to 5 (agree strongly). The study also incorporated qualitative data through an observation checklist and interviews.

Based on previous research (Chang & Fisher, 2001; Newhouse, 2001), a panel of six experts from the department of education at Yarmouk University reviewed the initial attitudinal questionnaire and offered suggestions that were used to modify the questionnaire by omitting, adding, or rephrasing items' bringing the number of items from 78 to 52 items, while the 8 categories (Technology competence, Collaboration, Active learning, Course content, Learning environment, Reflection, Teacher support, Class management) remained the same. No validation was done on the interview and the checklist because; they were driven from the content of the previously validated attitudinal questionnaire. Furthermore, a reliability coefficient was computed using Cronbach Alpha for the questionnaire (Sub-Scale) and the observation checklist (Chang & Fisher, 2001) amounted to 0.814 and 91.312 respectively, which indicates that they are appropriate for the purpose of this study.

Sample of the study

The population of this study consisted of all the experimental schools (Reiadeih) in Jordan in the academic year 2005/2006. According to the ministry of Education in Jordan the number of the online experimental schools is 100. Of these schools, one school was randomly selected for this study (all students were males). The school consisted of 118 eleventh grade physics students enrolled in three sessions (considered the sample for this study) responded to the attitudinal questionnaire. Of the respondents 33 (28.4% of the sample) were selected to be observed in their classroom and interviewed three weeks later. The questionnaire was administered by a research assistant after he was trained by the researcher for this purpose. Both observation and interview were conducted by the researcher.

Data Analysis

Data analysis is a key component of mixed-methods research. Data on the attitudinal questionnaire was collected, sorted and analyzed using Spss packages. Data on the tape-recorded interviews were transcribed for analysis then; the researcher gave back the transcripts to the interviews for reliability purpose. The feedback from the interviewees indicated that they were satisfied with what he/she had said and the transcripts consistent with their views, concerns or understandings. Transcripts were coded in a systematic manner using open-coding procedures (Miles & Huberman, 1994). A deep analysis of the interviewees' responses and the observation checklist was used for the interpretation of issues perceived by the participants on the attitudinal questionnaire. Data were organized around each research questions, which related to online learning experiences of Jordanian students. The researcher examined the data on the interviews, observation checklist and the questionnaire for similarities and differences.

Means and standard deviations for each of the attitudinal questionnaire items and the classroom observation checklist were computed, and then Pearson's correlation coefficient was also computed between the students' attitudes and their real classroom practices. T-test was used to test the differences between the mean for the students' attitudes and the mean for their actual practice. The data for the interviews were analyzed qualitatively.

FINDINGS AND DISCUSSION

Students' ownership and use of personal computers at home

Thirty three percent of students had access to a personal computer (PC) at their homes. Of the 33% with a PC, forty-one per cent had access to Internet. Of the 41% with Internet access, thirty-seven percent had described themselves as regular email users. None of them stated that their use of email was to maintain contact with teachers or for some other purpose related to their learning.

Students' use of personal computers at school

All respondents had experience with computers. Around three-quarters of respondents had never used the Internet previously to support their studies whilst at school. None of them stated that they searched the Internet for information related to their studies at school after class period.

Students' attitudes towards online Physics Curriculum

The results of the analysis of the Jordanian students' responses to the attitudinal questionnaire were used to measure the students' attitudes towards online learning. Table 1 shows the means and standard deviations for each item on the questionnaire.

Table (1): Means and standard Deviations of the students' attitudes towards utilizing online learning

No.	Rank	Item	Mean	SD
29	1	Online Curricula show the learners' readiness and ability to make decision.	4.89	.54
11	2	Online Curricula Create a respect of rules in learners.	4.78	.93
56	3	Online Curricula are viewed negatively not only by learners but also by teachers and parents.	4.75	.63
22	4	Online Physics' Curriculum involves the use of social skills which are directly relevant to the world outside the classroom.	4.55	.65
42	5	Students often perceive Online Curricula as mere time fillers.	4.42	1.10
49	6	Online curricula increase use of outside resources.	4.35	.57
41	6	Online Curricula increase learners' anxiety and fear of learning.	4.35	1.01
33	7	Online Curricula enable learners to acquire new experiences, which is not always possible during a traditional curriculum.	4.25	.84

5	7	Online Physics Curriculum is tedious and time consuming	4.25	.71
58	8	Online curricula make students able to handle more complex assignments.	4.23	.65
28	8	Online Curricula do not work well with sensitive students.	4.23	.69
59	9	Online curricula need considerable effort by the learner.	4.19	.57
8	10	Online Curricula cause chaos and disorganization.	4.10	.75
9	11	Online Curricula enhance of student self esteem.	4.09	.68
17	12	Online Curricula direct learner energy toward learning.	4.01	.66
55	13	Online curricula Manage time.	3.89	.74
30	14	Online Curricula create a relaxed atmosphere that breaks the ice and introduce new ideas.	3.89	.74
19	15	Through Online Curricula, learners develop their fluency in the target subject.	3.88	.75
4	16	Online Physics Curriculum provides satisfaction with the immediate feedback.	3.83	2.45
52	17	Online curricula give students choices about how best to convey a given idea.	3.56	.91
35	18	Online Curricula help learner recall materials in a pleasant, enthusiastic manner.	3.25	.98
26	18	Online Curricula represent an approach to the understanding situation.	3.25	.71
24	18	Online Curricula encourage co-operative interaction among the learners.	3.25	.84
7	18	Online Curricula weaken the students' personality.	3.25	.88
50	19	Online curricula create facilitating atmosphere.	3.12	.74
32	19	Online Curricula bring teachers and learners into a more agreeable and intimate relationship.	3.12	.99
51	20	Online curricula support a greater awareness of audience needs and perspectives.	3.01	1.02
40	21	Online Curricula help provide feedback on learners' correct and erroneous physics use.	2.89	.98
36	21	Online Curricula give learners the freedom to search, discover and learn.	2.89	.54
16	21	Online Curricula is more effective than other learning technique.	2.89	.62
3	22	Students are never enthusiastic about using Online Physics Curriculum as teaching tool.	2.88	1.12
23	23	Online Curricula increase the learners' willing to learn.	2.84	.73
2	23	Online Physics Curriculum engages learners emotionally, physically and mentally in the physics concepts and skills.	2.84	1.19
47	24	Online curricula develop Students' ability to collaborate on substantive content can be further enhanced.	2.56	.98
20	24	Online Curricula encourage the learner to be reflective upon his/her progress.	2.56	.84
54	25	Flexibility is the strength of Online curricula.	2.54	.84
34	25	Online Curricula allows students to share their experiences and learn from each other.	2.54	.64
21	25	Online Curricula offer act-and react-activities which demand creativity and active participation.	2.54	.78
12	26	Online Curricula present concrete problems in a simplified and amusing way.	2.53	1.0

48	27	Online curricula promote collaboration and cooperation among students.	2.45	.95
46	27	Online curricula led Students to work cooperatively and to provide peer tutoring.	2.45	.96
10	27	Online Curricula are useless and time demanding.	2.45	.98
13	28	Online Curricula are valuable in revealing learners' difficulties in learning.	2.44	1.1
18	29	Online Curricula promote positive social attitudes among students.	2.42	.85
57	30	Lack of immediate feedback was a challenge to really self-motivation.	2.35	1.32
43	30	Students gain a sense of empowerment from learning.	2.35	.96
39	30	Through Online Curricula, learners experiment, discover and interact with their environment.	2.35	1.10
37	31	Online Curricula encourage learners to interact and communicate and, thus, serve as orientation for future integration.	2.34	1.25
6	32	Online Curricula changes students' role from passive to active recipient of information.	2.33	.68
45	33	Online curricula led to increases in students' (and often teachers') sense of self worth	2.23	.95
24	33	Online Curricula help the students create contexts in which the target concept is useful and meaningful.	2.23	.69
44	34	Online curricula make learners feel confidence about being able to learn.	2.12	1.12
53	35	Online curricula increasing convenience, and expanding educational opportunities.	2.01	.94
1	36	Online Curriculum is fun, and learners like to use it.	1.85	1.21
27	37	Online Curricula are valued within our culture.	1.84	.89
14	38	Online Curricula involve the whole class no matter how large it is.	1.78	1.21
15	39	Online Curricula stabilize instruction and present concepts faster to the learners.	1.33	.52
38	40	Online Physics Curriculum helps learners see the beauty of physics.	1.25	.98
31	40	Online Curricula allow shy students to express their opinions and feelings.	1.25	1.43

Table 1 shows that 33% of the items of the questionnaire ranking between 1 and 16 have gained means ranging between 3.83 and 4.89, all falling within the 'strongly agreed' category. Items ranking between 16 and 26 have gained means ranging between 2.53 and 3.83, all falling within 'moderate agreed' category. Items ranking between 26 and 40 have gained means ranging between 1.25 and 2.53, all falling within 'disagree' category.

The results presented in Table 1 above indicate that Jordanian students have an overall unfavorable attitude towards utilizing online physics curriculum in their classrooms ($M=2.63$; $SD=1.11$). Students tend to agree that online physics curriculum does not motivate and that it is unenjoyable, useless and time demanding, does not facilitate the learning/teaching process, and that learners do not like to use it. This may be attributed to the fact that Jordanian students accept only low responsibility of involvement in the learning process, where as high responsible learners

are usually accepted in online learning. These findings imply that students had the same expectation for their roles as they experienced it in their traditional class format. This would imply that online learning experience is viewed by Jordanian students as more culturally oriented, and online learning would be perceived as requiring strong culture. Jordanian students had a culture of values and beliefs that affects the stability of their online learning. This would have implications for the quality of online learning (Culture approaches). Online learning may be perceived as congruent with culture approaches to learning and higher quality learning outcomes. If this were the case, managing culture would be a significant challenge for students engaged in online learning.

The results of this study also show that, generally speaking Jordanian students suffer from serious problems with curriculum activities. This may be attributed to the fact that Jordanian students' lose part of the session time preparing for the instruction which in turn makes students feel that online learning is inconvenient to them. Another explanation is that the cases in which most of the students do not have access to computers and Internet at their homes, which suppose to be the place most convenient to them. Such autonomy prohibited students from exercising efficient learning activities. Of course, the present researcher as well as the study participating students realizes the financial resources of the Jordanian families to provide their kids with computer and access to the internet at home.

With regard to the cognitive experiences investigated in this study, the findings revealed that cognitive domain was perceived as the highest experience practiced by students. This result was consistent with the educational literature, in that, online learning should be viewed as more cognitive and internally oriented (Garrison, Cleveland-Inn, and Fung, 2004). These findings would imply that students do see a difference in the learning process and need their role adjustment. Moreover, it would imply that Jordanian students view online physics learning as more internally oriented and requires a greater individual responsibility. These implications would have suggestion for future research. That is, role adjustment may be seen largely a significant challenge for students engaged in online learning. In short, implementing a successful online course requires learners to take more responsibility, adjust to new climate, adjust to new context, and learn how to participate, apply ideas or concepts, and stimulate their own curiosity (Garrison, 2004).

More significantly, the importance of personal contact with the educational process was strongly highlighted. Jordanian students felt that online curriculum does not facilitate effective discussion including interaction with each other and with their teacher. These findings imply that the online physics curriculum leads to a loss of study routine and continuity and those learners would accordingly do less work in the online curriculum. The most common explanation for these findings is supported by Holley (2002) who concluded that students will experience negative learning experiences if guided by a lecturer who retains a negative attitudes towards traditional learning whilst promoting e-learning methods. Teachers in this case may have negative attitudes that can affect their students. Shank (2000) suggested that, to improve teaching practices through e-learning, teachers must be committed themselves to constant and changing learning curve. If this was the case, the challenge for future research would be to understand how teachers manage culture in a society that has newly developed online learning community.

Experienced online physics learner

To determine the truth of the findings presented in table 1, the observation checklist was used to investigate learners' actual use of online physics curriculum in their classrooms. Table 2 shows the means and standard deviations for individual items as well as the whole classroom observation checklist.

Table (2): Means and Standard Deviations for the items related to the observation checklist

NO.	Item observed	Mean	SD
6	The students seem to view online physics curriculum as mere time filler	4.23	0.88
8	the content of online curriculum is impractical and frustrating	4.21	1.03
9	The students seem to perceive that online physics curriculum is useless and time demanding	4.07	0.68
3	The students seem to believe that online learning process is another face of the traditional face to face instruction.	4.01	0.78
1	Online physics Curriculum seems to cause chaos and disorganization	3.98	0.71
5	The students seem to be involved in a thoughtful, active discussion involving their personal communication.	2.35	0.98
2	Online physics curriculum bring the students and their teachers into a more agreeable and intimate relationship	2.16	1.01
7	The students seem to work cooperatively and to provide peer tutoring	1.89	1.32
4	The students are obviously relaxed and naturally engaged in the learning process	1.74	1.01

Table 2 shows a clear trend between the observation and students' attitudes towards the utilization of the physics online curriculum in Jordan (see Table 1 and 2). The content of online curriculum is impractical and frustrating (4.21). This is what most respondents indicated. All items of the observation checklist indicate that Jordanian students were not able to involve in the learning process (means ranging between 1.74 and 4.23). The classroom was seen as the place to cause chaos and disorganization (3.98). Students were not relaxed, and having felt of anxiety and fear of learning. This may be because respondents were grouped of (3-4) students using one PC (Only nine PCs were available in the computer lab where the class was conducted). They mainly felt pressures learning through the Internet and were not confident in being able to learn. These findings imply that students held unpleasant experiences from their online learning experiences. Moreover, it would have implication for the quality of online course (i.e., quality benchmarks criteria). Online learning may be perceived as congruent with quality benchmarks criteria for good-quality online course. If this was the case, an interesting question is what caused their negative experiences. That is, online physics course may be seen supported by poorly designed learning environment. Song et al.'s (2004) asserted that the design of the course is one of the helpful components in online learning. Clark (2002) suggested that the content of e-learning should be more "meaningful, distinct, vivid, organized and personal" (p.601).

The findings further show that the majority of the participants was none active learners, their teacher still controls the instruction as a center of learning. In this environment, the teacher seems to control all aspect of the lesson. There was no group discussion performed and no idea was explored, which would involve students successfully in the learning, though frequency of students were more often look over each others' shoulders, trying to get assistance from each other. Those who did were not able to involve adequately in the process of learning, they may be still assuming the role of the traditional teacher in their classroom, which is based on the premise that the teacher is the one who imparts knowledge to a class full of students. These findings imply that Jordanian students fail to view the online learning experiences as internally oriented instead,

it was viewed as more externally oriented. An interesting question would be is whether cognitive presence is perceived by Jordanian teachers and students as less of concern in online learning experiences compared to traditional face to face learning experiences.

The findings of this study revealed that when students were working on a problem-based practical learning, most students were observed with hardly any interaction of them is caused. Those who actively looking over each others shoulder in the classroom were not able to be involved in the process of learning. Few of the students were noticed chatting with somebody else, while others setting lost on their seats.

When students are using technology as a tool or a support for communicating with others, they experienced a lack of connection with their teacher, especially "one-to-one" relationship with the teacher. They expressed the need for more feedback from their teacher. These findings imply that *the physics online curriculum fails to allow students to be actively thinking about how to generate, obtain, manipulate, or display information*. However, this result was consistent with the educational literature, in that, learners in Internet-based courses with more negative perceptions expressed the need for more feedback from the instructor as well as more structure (Howland & Moore, 2002).

In this study the most positive students were the assigned leaders of the groups, though the students were depending on their teachers to state the objectives to be accomplished and to control the learning process. It was observed that respondents believed that online learning process is another face of the traditional face to face instruction with the use of computer and the internet as a technological tools serve as a course materials to enhance some aspect of the subject in process. These imply that *Jordanian students are teacher dependent, inactive in the process and irresponsible for their learning*.

The findings of the t-test further revealed that the correlation between the items of the questionnaire and the observation checklist is 0.61, which means that a statistically significant learner relationship exists at ($\alpha = 0.05$) between students' attitudes towards using online physics instruction and their actual classroom use of these instruction.

Students' Opinion of the online curriculum

The qualitative analysis of 33 interviews has revealed practically the same findings, which lends considerable support to the findings revealed by the attitudinal questionnaire and the observation checklist, is instrumental for the validity of the conclusion drawn from this study (Researcher' believe).

When interviewed, the respondents who were observed having difficulty learning, reported technical problems in their online learning experiences. There was significant study mode bias amongst the interviewees. However, students were more inclined to go back to their original classroom environment textbook. Some were encouraged to study at home using the course content already placed on CDs. Some could see the classroom session serving as a wasting time. A number of students indicating a preference for traditional curriculum more commonly felt that having more time to research for coursework/projects and to reflect would be a waste of time to them.

The majority of participants indicated that they would prefer to have the old traditional curriculum back on. A number of explanations were given for this but the most common theme among respondents was once again a strongly felt requirement for personal contact with text books and the original classroom environment and the learning benefits derived from that contact. A second

often cited theme was simply that respondents felt that Online Physics Curriculum was tedious and time consuming (e.g. when online session began, teachers have to take all students to the computer lab; due to the limited PCs they had to be arranged in groups then have to wait for the principal to give the data show to the lab personal advisor (problems with finding the principal, lab personal and delay in getting the network connected were specifically mentioned), by the time getting the class started, there was only few minutes left for learning. A large number of the participants have been found to think that the lack of session time and classroom resources such as PCs, fast network, and necessary resource materials all hamper their online learning. Students need to be flexible and able to manage with the available resources, since the problem of online learning is faced by virtually all Jordanian public schools.

Besides, the use of online physics learning may be unfamiliar not only to students but also to the teachers and parents. The respondents revealed through the interviews that the initial use of online learning may pose problems of operation and general acceptance especially from parents. At first sight, and unless forewarned, some parents may find it difficult to accept the relevance of or attention to using online learning. A student reported being reprimanded by a parent for using the internet. Schools may need to make parents aware of the need for online learning through meetings or pre-arranged classroom visits.

CONCLUSION

At Jordan, a tremendous growth has been made in the field of online education. ICT is increasingly becoming an important constituent of today's Jordanian educational institutions. The current researcher recognize that using online in teaching /learning does not hold great promise for becoming a powerful instructional tool that would increase students' engagement in learning, or enhances their collaboration, and improves their motivations. However, a close look at the current utilization of online physics curriculum in Jordanian schools shows that the full potential of their uses is yet to be realized. Within the context of the present findings of the study which displayed a host of major learning experiences in the effectiveness of online learning, the actual success of online curriculum project will not happen as long as these learning experiences are not managed.

The appeal of the online curriculum can be traced in part to its inherent pedagogical strengths. In general, participants in this study expressed enhancement of their ability to make decision. It can be seen from the data obtained that a high proportion of the students surveyed believe that online curriculum enables learners to acquire new experiences, which is not always possible during a traditional curriculum. Their use of the Internet to underpin the assignment process is significant as is the fact that many students reported that it was difficult to get clarification on assignments, etc. due to lack of communication between student and instructor. What is also clear from the findings is that students are very clear about the advantages of using the Internet but not use of the online learning environment.

The students surveyed firmly believe themselves that online teaching and learning environment they experienced has a significant role to play in the negative attitudes they have towards their physics' learning experiences. Their comments suggest that they see the use of online resources as potentially going well beyond the use of the online curricula. This is evident by the overwhelming majority responding no to the question 'Do you think that combining face-to-face classes with online activities (discussion boards, short answer tests) is potentially useful'? In addition to this a significant number of respondents clearly felt that the online learning process they had is another face of the traditional face to face instruction.

Given the previous learning experiences, using online curriculum in Jordanian schools has presented a degree of uncertainty as to its efficacy. This uncertainty can be highlighted in the following:

1. Awareness of role responsibility; those who teach online courses and those who learn through online should understand what their roles are and adjust their attitudes for this role change;
2. Teachers involvement in planning; it is important for teachers to master, design, and delivery strategies, techniques, and methods for teaching online courses;
3. Interaction constraints are not conducive to the implementation of online curricula (observations and Interviews with learners). An overriding caution permeated those learners who thought that online instruction is another face of traditional instruction, Instructors should consider how to increase the interaction between students-instructor and peer-interactions by using various types of instructional design methods and;
4. Technical support; the ministry of education as the govern body for educational reform in Jordan should provide technical support for teachers and students.

In conclusion, the available evidence obtained from this study provides support for our speculation that the use of online curricula in Jordan's schools is uncertain. Indeed, moving from traditional methods of teaching to online methods of instruction often create dramatic shifts in the perspectives of teachers and their students (Terrell, Dringus, 2000).

RECOMMENDATIONS

To provide better utilization of online curriculum, the Jordanian Ministry of Education should take into consideration the following: Firstly, sufficient attention has to be given to change and how teachers and students can adapt to this change. Due to the shift from traditional curriculum to online curriculum, the teacher's role has become more of a facilitator than a traditional lecturer. Therefore, the traditional teacher-centered educational environment and student-centered online educational environment will have many differences. Besides their role shifting, the role of the virtual teacher is to "select and filter information for student consideration, to provide thought-provoking questions, and to facilitate well-considered discussion" (Kettner-Polley, 1999). Students must also move from being a more traditional passive classroom learner into a more active online inquirer, it is important for the Jordanian teachers to motivate their students to adjust their roles when becoming online learners. Secondly, using technology, as the inter-medium for teachers to deliver online courses tends to be another challenge for online teachers. Muirhead (2000) reported teachers' frustration with the reliability of computer technology, providing technology support to students, and the absence of mature integrated content development tools. Palloff and Pratt (2001) also noted that teachers must be trained "not only to use technology, but also to shift the way in which they organize and deliver material" (p. 3). Thirdly, changes needed in the interpersonal relations between the teachers and their students. Interaction with students is very important for online teachers for encouraging students self-directed, disciplined and self-motivated. Because Jordanian teachers have experienced traditional method of teaching, now they have to face the challenge of lack of some direct interpersonal contact with students, and they have little contact or feedback to gauge the clarity of their communications. Fourthly, teachers need to upgrade their technical skills in order to keep abreast of technological developments, knowing how to design interactive activities and course syllabi, how to operate the learning platform, and troubleshoot with problems online learners may encounter (Cuellar, 2002). Deubel (2003) suggested that teachers could read literature about online learning environments first, and then get trained to use required technology, and finally seek assistance from experienced instructors when needed. Fifthly, the finding of this study suggests calling on the

Ministry of Education (MoE) in Jordan to capitalize on the findings of this study in future national plan.

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