Barriers to E-Learning in Information Systems

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Abstract

E-learning has become a reality in Information Systems education. As part of a larger study, the authors surveyed 103 information systems academics from the USA and Australia to determine the motivations for designing and creating e-courses. This paper looks at the three most frequently mentioned reasons for not being involved in e-learning in IS. Using readably available lists of IS academics, the overwhelming majority of respondents have created only one or two e-courses, took up the challenge out of personal desire or a personal need to add value to an already existing course, and that pecuniary compensation was not the main personal motivation. The data suggests that not all e-courses are as successful as one would expect, for almost 20% of the respondents are neutral in their overall satisfaction with the e-course experience. Seventy-one percent of respondents spent more time teaching an e-course than a traditional course, and 89% report it taking more time to prepare an e-course. The survey concludes that students appear to learn only slightly more in an e-course than a traditional one.

Keywords: e-learning, e-course, distance learning

1. INTRODUCTION

A survey of IS educators was conducted during the summer of 2002 of those who identified themselves as being involved in distance learning (also known as electronic learning or e-learning). There were 130 respondents from direct e-mail to AITP-EDSIG members (generally IS educators), from two calls for participants in IS World list, and from a third list of Australian and New Zealand IS educators.

While much is available on e-learning and the generation of e-courses, little exists to address the **motivations** by IS educators to create such courses or to access if, in the opinion of those who create the courses, their level of satisfaction of student outcome compared to the traditional course. It was suspected that e-courses, while time-consuming to initially design and implement, offered less in course content than compared to the same course taught in the traditional classroom, and were also not considered to be up to the same rigorous standard. The survey produced some

surprises, for IS educators did not identify a lack of rigor as a problem area.

This paper will focus on three points of the study primarily centered on why faculty do not get involved with e-learning. These three factors are: (1) Time constraints; (2) Quality and security issues and (3) appropriateness.

2. INVOLVEMENT WITH E-LEARNING: ISSUES OF PREPARATION, TEACHING AND QUALITY

There were forty-five respondents indicated they were *not* involved in e-courses. Table 1 shows the responses and relative percentages. Of those who have not been involved in e-learning, the largest barrier to e-learning seemed to be the time constraint.

Option	Number of Responses	Percentage of Responses
Inadequate time	18	40%
Quality and security concerns	11	25%
Not appropriate for us	8	18%
Don't know how to approach e-course	5	11%
Too expensive	3	7%

Table 1 Reasons for not becoming involved with e-courses; N=45.

Time constraints

Education requires several time factors: preparation time, teaching time, grading and evaluation time, and communication time. The most frequent response from respondents as to why they have not been involved with e-learning was "inadequate time." In the questionnaire this issue was followed with two additional questions for those who have taught e-courses – a question on preparation time (Table 2) and another one on teaching time.

A Discussion of Preparation Time

	Count	%
Very much more on e-Course	25	41%
More on e-Course	29	48%
About the same	5	8%
More on traditional	2	3%
Very much more on traditional	0	0%

Table 2 Time to *prepare* e-Course

From those who did reply to teaching at least one e-course, 41% indicated that the development of an electronically delivered course took a ***significantly*** longer time than a traditional course. In fact, from our study (Table 2A), ***89%*** of the respondents that had developed e-courses indicated that it took longer to develop an e-course than the traditional classroom course counterpart with only 8% saying the preparation time was about the same and 3% felt e-courses took less time. These responses were from faculty who had delivered e-courses in the IS area.

	Count	%
More time on e-course	54	89%
About the same	5	8%
More on traditional	2	3%

Table 2A – Compressed time analysis table to *prepare* e-Course

One might speculate why e-course development is so time-consuming given an assumption that instructors are familiar with the course material and have (in all likelihood) taught the course in a traditional fashion. The instructors have syllabi, notes, tests, assignments, etc. that one would think could be directly converted to HTML format and delivered as e-course.

The time spent in development can be deceiving. Depending on the campus and the delivery method, just converting a Word document into HTML is generally not adequate to the task. Developing electronically delivered testing formats also requires significantly more time. Assignments, tests, quizzes, notes and all instructional and evaluation materials must be converted to HTML or to some electronic format. Depending on the campus and on the method for instruction, the faculty member might be required to learn scripting languages like ASP, JavaScript, Perl, CGI interfaces and more. Tests that might have been just dupli-

cated and handed out in class now had to be encoded into HTML forms and grading had to be coded into electronic methods. Authors generally use some kind of course delivery software, i. e., Blackboard, WebCT or some other delivery package, and it does require a time commitment to become proficient with such packages. Again, the instructor has to develop electronic versions of tests as well as electronic versions of answers. While the Blackboard package (other packages exist that perform similar tasks) may take some of the actual coding of active server pages code away from the instructor, the time spent can be significantly more than a traditional course.

A second aspect of the time in development is in the detailed information. In a traditional course setting, the instructor can include a wealth of information not in the course textbook in a lecture format. Within an e-course, lectures are generally out – so notes, PowerPoint slides, etc. must be prepared in advance and loaded for student download. Some instructors have experimented with on-line streaming video lectures with some varying levels of success. Students with slower Internet connections have difficulty with such lectures, plus lecturing to a camera presents different challenges as compared to lecturing to students (who can raise their hands and ask questions if they are confused).

If textbooks were sufficient in the learning process, there would be little or no need for faculty members. Instructors bring explanations and interpretations to textbooks and the textbooks, while an integral part of the learning process, are not the only instructional format. When one reflects on the traditional learning process, it is a blend of lecture, interaction, textbook and other reading and support materials, as well as activities, assignments and tests. Traditional learning incorporates more of the human senses as the sense of hearing (lectures and discussions), vision (reading texts and support materials), speech (involvement in lectures and discussions) and even feel with assignments and activities. With e-courses, most hearing and speech activities are eliminated and a greater reliance is placed on vision.

Some instructors have attempted to supplement e-courses with video taped lectures. These require more preparation time and effort to prepare, deliver, encode and place the lecture in an electronic format for student use. And as contrasted to in-class lectures and discussions, videotaped lectures do not allow for interaction or discussion.

With a traditional on-campus course, the instructor has an outline to follow, and may do his/her preparation for the course as an ongoing activity during the entire semester. This might mean an hour here, two hours there – but spread over a typical 14 to 16 week semester. The instructor also judges feedback and questions from students and can adapt the course to meet specific needs and questions. The instructor also has the luxury (as compared to an e-course) of watching body language and sensing the class's knowledge and level of understanding. This can result in making an activity that was scheduled for three days be covered in one day or visa versa, because of a perceived better understanding on the part of the students.

With an e-course, the bulk of the preparation must be done prior to the class. The instructor still develops and follows a syllabus and an outline, but now must anticipate learning experiences and activities rather than react to exact classroom situations.

With a traditional course, an experienced instructor in their field of expertise will carry much of that knowledge into the classroom with them. They can lecture without having notes as they know the material and know where the class should be taken. This can be contrasted to an e-course in which the instructor will generally not have the opportunity to lecture, prepare notes, web pages, and even presentations before hand.

It is, thus, not surprising that 89% of the respondents indicated that e-courses took longer to develop and prepare.

A Discussion of Teaching Time

Taking a second issue related to time spent teaching an e-course (Table 2B), 28% of the respondents who had taught electronic courses indicated it took *significantly more time* to teach an e-course; and 43% responded that it took *longer*. Combining these two facets (see table 2C – compressed teaching time table), 71% of the respondents felt it took longer to ***teach*** an e-course.

	Count	%
Very much more on e-Course	17	28%
More on e-Course	26	43%
About the same	12	20%
More on traditional	4	7%
Very much more on traditional	2	3%

Table 2B Teaching Time

Putting these two time considerations together – 89% felt it took longer to prepare an e-course and 71% felt it took longer to teach an e-course; one might be lead to the conclusion that the odds seem to be stacked against e-courses. Nonetheless, e-courses continue to be developed and taught for, seemingly, reasons of pedagogy.

In attempting to analyze while 71% responded that it took more time to teach an e-course, we may speculate on the reasons. In a traditional class of, say, 30 students, the instructor communicates with all 30 students at the same time, and can interact synchronously with the students in the classroom. With most e-courses, the primary form of communication is e-mail and other asynchronous communications (like discussion forums and web forms). One might reason that in a traditional classroom setting, the instructor can give a communication such as an assignment once, and even with interaction and feedback between the instructor and the class, it is synchronous and clarifications can be made in real time. With most e-courses as models of asynchronous communication, the interaction can lag and may even take days before all students fully understand the communication such as an assignment and all clarifications made. In a classroom setting, students can gain verbal clues from the instructor's body language as well as voice inflection, both of which are missing from most e-course communication.

E-course instructors may find that they are answering the same question asked by different students through multiple e-mail messages. There may be a difficulty trying to determine when a question needs clarification to the entire class as a group e-mail message or a response placed on a "frequently asked questions [FAQ]" page.

Assuming a standard three-credit class that meets three hours a week for a semester, the instructor physically spends three hours in the classroom in that traditional setting. In the e-learning model, the instructor probably will check his or her e-mail several times a day, spending multiple hours a week just in communications with the class.

	Count	%
More on e-Course	43	71%
About the same	12	20%
More on traditional	6	10%

Table 2C - Compressed teaching time

3. A DISCUSSION OF QUALITY ISSUES

In the case of respondents who indicated that they hadn't taught e-courses, the second highest issue was that of "concerned with quality". How does an instructor know that the person at the other end of the Internet cloud is really who he (or she) says he (or she) is? A student who is desperate to pass a course (or to get a good grade) may resort to outright cheating. They may ask (or hire) a family friend or acquaintance to take the course for them; they may pass assignments to experts in the field to complete for them. They may team up on assignments that were given as individual assignments. One author has been, on occasion, contacted via email by students from other campuses asking questions about solutions for assignments received from their e-course instructors. Such action is, at least, bold.

So, how does one control quality? A personal story based on the experience of one of the authors is presented to place the problem in perspective. On one occasion it was discovered that two students had taken an exam together. While on-line, they discovered that they lived close to each other and became friends, did the assignments together (when the directions were not for group projects), and then collaborated on the final exam. They developed the answers to the test (which had been sent electronically to the students) jointly. The author was only able to determine the cheating when they submitted the same answers – and the second person did not even change the other student's name on the test form!!!

Testing quality can be partially controlled through the use of proctor and password protection to web pages and testing pages. Students can be asked to secure their own proctors – which actually can lead to quality issues

as well. Neutral parties such as librarians and other professors are acceptable as long as their email addresses are academic or governmental. No proctor with a "hotmail" or "AOL" e-mail address should be acceptable. In such cases the proctor should verify the identity of the student and monitor the student during the testing situation. Since (in most cases) the student must be on-line while taking the test, it might be very simple for the student to have e-mailed notes and information to himself/herself and especially with a less than vigilant proctor read the notes while answering questions. An alternative might be to run Internet searches for answers during an on-line testing situation.

A related issue to quality of e-courses is in the perception of learning. The authors found (see Table 4) that 20% of the professors who taught e-courses strongly agreed with our question that students learned more in an e-course as compared to a traditional course, and 41% agreed that students learned more. That is to say, 61% or respondents felt that students learned more. On the same question it should be noted that 23% of respondents were neutral – that is equating to students learning about the same in an e-course as compared to traditional courses and 16% felt students learned less in an e-course.

	Count	%
Strongly agree	12	20%
Agree	25	41%
Neutral	14	23%
Disagree	10	16%
Strongly disagree	0	0%

Table 4 Learned more in e-course than traditional.

It is open to debate why 61% of professors might say that students learned more in an e-course as compared to a traditional course. Generally the onus is more on the student for learning in an e-course. The students need to read the book, do the assignments and learning the material mostly on their own. Professors move from being "the sage on the stage" to the role of "the guide on the side".

4. CONCLUSION: E-COURSES NOT APPROPRIATE FOR ALL INSTRUCTORS AND INSTITUTIONS

Boxes were available in parts of the survey to ascertain open-ended comments from the survey participants. The following discussion is a compilation of those comments, edited to fit the spirit of the comment and not necessarily the specific words used.

Campuses must combine the requirements of being institutions of higher education with that of a viable business entity. Some campus presidents or deans have felt that delivering courses in electronic format might attract students that might not have attended that campus. When one sees the success of programs like the University of Phoenix, the business aspect of attracting students through e-courses might be appealing.

One campus may offer e-courses primarily in the summer as a method of assisting students in reaching degrees quicker and yet without having to come to campus. Students taking e-courses do not have to drive to campus, find a parking place, take time off work (for working professionals), or having to adapt their schedule to a campus schedule, frequently an impossible task.

There is an old expression (from an unknown source) "on the Internet, no one knows you are a dog." Even with safeguards, the issue of whether an e-course is a valid option to traditional courses must be discussed.

Some campuses pride themselves on their interaction with students. The students are treated as individuals and known by name. There is a genuine family atmosphere between faculty, staff and students. Other campuses are more business like – "you pay your money – you make your choice," and we are not going to hound you. Campuses with a strong liberal arts heritage might view e-courses are less appropriate for building that rapport with students.

On the other hand, many campuses are delivering some type of e-learning component. Some incorporate e-learning concepts as supplements to existing courses, such as discussion forums and supplemental activities to an on-campus traditional course. There are some accredited campuses that deliver entire degrees through electronic means. [Author note … if the spam e-mails are to be believed,

there are "prestigious non-accredited universities" that also deliver entire degree programs on-line].

A campus needs to assess its thrust and its foundation. If e-learning and e-courses are compatible with the campus's mission and can further the institution, then that is a reasonable extension. Likewise if the campus finds that its mission is more hands-on with students, with higher interaction between faculty and students, e-learning may not be appropriate.

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