Student Attitudes toward Web-enhanced and Web-based Versions of a Learning Tools Course

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Abstract

The presentation describes the revisions to a course and the resulting student attitudes and learning. Learning Tools was revised in 2003 from oncampus only to both oncampus and online delivery. Revisions were made by standardizing the two versions, updating the technology applications presented, and modifying the instructional strategies used. These changes were based, in part, on the evolving technology and survey data (former students and instructors). The results of student opinion survey will be presented as well as suggestions for future directions of the course.

Introduction

Christenson (2002) suggests that teaching technology has a positive effect on teacher opinions, including reduced computer anxiety and increased computer enjoyment, but noted a time lag for positive effects on students with technology tools. Factors that may affect teaching technology and corresponding student opinions include learner and instructor anxiety, experience level, and the evaluation instrument itself. For instance, student anxiety toward technology is increased for those with little or no computer experience (Necessary & Christensen, 1996) or who are required to take a course rather than choosing it as an elective (Parish & Necessary, 1996). Khine (2001) found that males are more confident and feel less anxiety than females when using computers, perhaps, because they have more computer experience. Marginal differences showed that females like to use computers and appreciate their usefulness, but still exhibit anxiety toward using computers.

Abbott and Faris (2000) suggest that positive attitudes toward instruction may be because students teach themselves; instructors foster collegial atmospheres in which students complete course requirements and are committed to providing successful technology experiences. Sweaney (2001) suggests that students are more likely to learn technology by being able to play with the technology. Furthermore, Koltich (1999) states that mutual respect by teacher and student facilitates positive attitudes and learning. A somewhat hidden implication for studying attitudes toward learning technology may lie in the instrument itself. Research findings by Kolitch (1999) using the Student Evaluation of Instruction suggest that it may lead students toward opinions that reject alternative instructional methods involved with learning technology.

Historical Perspective to Changes to the Learning Tools Course

Learning Tools is a graduate course designed to introduce students to several basic media tools. Its purpose is to assist students with their coursework and ultimately in the work place (2002-2003 Undergraduate & Graduate Bulletin). Learning Tools has been taught as a weekend course for 1 credit and scored on a pass/fail basis for over the last 12 years. However, Learning Tools has evolved over a decade with the changes in the types of technology taught and how it has been implemented (Davidson-Shivers, Jackson, & Wimberg, 2003). Changes in the instructional strategies and delivery systems were based on the practical matter of needing an online version of the course, the evolving technology related to the IDT field, survey data of former students and instructors (Wimberg & Jackson, 2003), learning psychology principles that advocate practice and active participation (Driscoll, 2001; Mayer, 2003; Ormrod, 2003), and guidelines for teaching technology tools (Davidson-Shivers, Jackson, & Wimberg). A table of the chronology was shown at the presentation.

Because the changes were significant, it was decided to document the changes made and address what effect, if any, they had on student learning and attitudes toward the course. For example, in the past, it has been taught by an instructor in-charge with the use of additional facilitators and was delivered as a weekend course. The delivered only as an oncampus course with multiple instructors teaching the contents during two-hour intervals over a term. Fall 2003 marked the first time it was taught online using web resources, with one instructor being its facilitator while a second offering provided an on-campus course facilitated by two graduate

students. While the University requires that online courses be equivalent in content and course requirements to their on-campus counterparts, some differences occurred in order to take advantages of the Web environment and instill some sense of community among learners.

Methodology

Participants

The participants in this study were graduate students (*N*=20) in Master's and Doctoral IDT program at a southeastern university. These students have varied educational and professional backgrounds, often fully employed. Approximately equal numbers of males and females (*n*=10) were enrolled in the online version whereas the oncampus version (*n*=10) had only two males.

The changes in the choices of software were based, in part, on data gathered from the student and instructor survey (Wimberg & Jackson, 2003). The most significant perception gathered from this survey was in the area of requiring assignments for a grade. Both instructors and students agreed that adding an assignment for a grade would improve the delivery of the learning tools course.

Course Redesign & Revision Guidelines

The underlying assumption for these changes is that students are becoming sophisticated in using technology; tools taught 10 years ago are now considered prerequisites for the current course offerings. A second reason for change is to keep students current on new technology tools as they emerge. The redesign and revision of the *Learning Tools* course resulted in the oncampus version becoming a web-enhanced instruction (WEI) and the addition of an online version with web-based instruction (WBI). The following guidelines were used in the development and implementation for both the WBI and WEI versions:

1) Provide an overview of learning tools for students to acquire basic skills rather than proficiency;
2) Provide meaningful assignments as indicators of knowledge gained;
3) Provide opportunities for collaboration and questions about assignments. A threaded discussion called "The Student Lounge" was provided for both versions.
4) Class size was not to exceed 12 students for adequate management and fostering of a collegial atmosphere.
5) Explain that students' roles were as self-regulated learners at the beginning of both versions.
6) Encourage students to search for other tutorials and materials through the Web, library, etc.
7) Explain that instructor is a facilitator, not sole knowledge authority or provider.
8) Instructors (faculty member and graduate assistants) assisted students when needed through emails, office hour meetings, and phone conversations; and
9) Both versions were developed and delivered by one faculty member and two graduate assistants who actively provided student support.

Learning Tools Content & Instructional Materials

The current versions contain eight technology sessions as follows: a) An introduction to Windows basics, the Web, and online library resources, b) MS Excel & Access, c) MS PowerPoint, d) Adobe Acrobat Reader, Inspiration, and media players, e) Adobe Photoshop f) Windows Sound Recorder and Cool Edit, g) Dreamweaver & Websites, and h) Course Wrap-up and Evaluations. Students were asked to purchase a textbook related to MS Office XP or 2000, depending on the software installed on their computers. In addition, a list of online reference materials and tutorials were provided for both versions of the course. Short biographies of students and instructor or teaching assistants were provided for both versions.

Text-based and PowerPoint lectures were supplied to the WBI version, and "live lectures" accompanied by the same PowerPoint materials were presented to the WEI. Both courses allowed for students and instructor/teaching assistants to communicate with each other through e-mail and threaded discussion. In addition, students had their own threaded discussion (entitled Student Lounge*)* in which students could post helpful suggestions or ask questions to each other. The teaching assistant monitored them as well in order to alleviate any frustrations due to technical difficulties.

Instruments

Three self-report instruments were used: Former Student and Instructor Survey, Proficiency Checklist, and Student Attitudes toward Learning Tools Course. In addition, extant data from course records provided the information for the changes recorded over the last decade. Extant Data , shown in the presentation, were

discovered by examining old course records and interviews with faculty members who had taught the course in the past.

The Former Student and Instructor Surveys were developed by one of the researchers and contained thirteen quantitative items. Table 1 shows the responses by former students and Table 2 shows response of former instructors. This survey also included eleven open-ended questions included a description of the course from the student's or instructor's perspective, how well he or she thought the class prepared the student, and a discussion of the chosen topics.

Table 1.*Results of Former Student Perceptions of the Learning Tools course*

Question	Continuum	Average
1. How much did you learn about learning tools (software) in ISD 600?	1 nothing 2 not much 3 a moderate amount 4 a good amount 5 a lot	2.6
2. How well did ISD 600 prepare you for IDD classes?	1 not well at all 2 fairly well 3 adequately 4 very well 5 extremely well	2.2
3. How well did ISD 600 prepare you for your current job?	1 not well at all 2 fairly well 3 adequately 4 very well 5 extremely well	1.9
4. How beneficial was ISD 600?	1 not at all beneficial 2 fairly 3 beneficial 4 very beneficial 5 extremely beneficial	2.6
5. How effective was the instruction in ISD 600?	1 not effective 2 fairly 3 effective 4 very effective 5 extremely effective	2.3
6. How effective was the design of the course regarding the **methods** used to teach the course?	1 not effective 2 fairly 3 effective 4 very effective 5 extremely effective	2.2
7. If ISD 600 were an elective, I would recommend other students take the class.	1 strongly disagree 2 disagree 3 somewhat agree 4 agree 5 strongly agree	2.7
8. The class required I put forth much effort.	1 strongly disagree 2 disagree 3 somewhat agree 4 agree 5 strongly agree	2.4
9. The topics taught were too difficult.	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	4.2
10. The topics taught were too easy.	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	3.2
11. The class would have been better if I had to produce assignments for a grade.	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	2.5
12. The amount of exposure to various learning tools was sufficient.	1 strongly disagree 2 disagree 3 somewhat agree 4 agree 5 strongly agree	2.7
13. ISD 600 was a waste of time?	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	2.9

N = 12

Table 2. *Results of Former Instructor Perceptions of the Learning Tools course survey*

Question	Continuum	Average
1. How much do you think students learned about learning tools (software) in ISD 600?	1 nothing 2 not much 3 a moderate amount 4 a good amount 5 a lot	3.2
2. How well do you think ISD 600 prepared students for IDD classes?	1 not well at all 2 fairly well 3 adequately 4 very well 5 extremely well	2.7
3. How well do you think ISD 600 prepared students for their current jobs?	1 not well at all 2 fairly well 3 adequately 4 very well 5 extremely well	2.2
4. How beneficial do you think ISD 600 was for students?	1 not at all beneficial 2 fairly 3 beneficial 4 very beneficial 5 extremely beneficial	3.0
5. How effective was the instruction in ISD 600?	1 not effective 2 fairly 3 effective 4 very effective 5 extremely effective	2.8
6. How effective was the design of the course regarding the methods used to teach the course?	1 not effective 2 fairly 3 effective 4 very effective 5 extremely effective	2.7
7. If ISD 600 were an elective, I would recommend other students take the class.	1 strongly disagree 2 disagree 3 somewhat agree 4 agree 5 strongly agree	3.5
8. The class required I put forth much effort.	1 strongly disagree 2 disagree 3 somewhat agree 4 agree 5 strongly agree	2.0
9. The topics taught were too difficult.	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	2.2
10. The topics taught were too easy.	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	2.2
11. The class would have been better if students had to produce assignments for a grade.	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	2.7
12. The amount of exposure to various learning tools was sufficient.	1 strongly disagree 2 disagree 3 somewhat agree 4 agree 5 strongly agree	2.8
13. ISD 600 was a waste of time?	1 strongly agree 2 agree 3 somewhat agree 4 disagree 5 strongly disagree	2.3

N = 12

The Proficiency Checklist was developed by one of the researchers and asked students at the beginning of the course to report their proficiency related to various software applications; it contained twenty items. Students were asked to check the response that most closely resembled their computer and Web capabilities.

Students were given the following choices: 1) F= Familiar = I have only heard of this software, 2) I = Intermediate = I have used this software often, but I am still unsure of some functions, 3) P = Proficient = I know this software well enough to teach it in its entirety. The following software was included in the checklist: Windows Basics, Internet & WWW, University Online Library, several Microsoft applications, Media Players, Photo, Sound, and Website Editors, and Web Management Systems. See Table 3 for the results.

Table 3 . *Results of Student Proficiency Checklist (WEI version only)*

Software	Familiar	Intermediate	Proficient
Windows Basics	1	8	1
MS Word		7	3
Internet & WWW		9	1
USA Library Online	1	9	
MS Excel spreadsheets	2	6	2
MS Access databases	5	5	
MS PowerPoint slideshows	1	6	3
Adobe Acrobat Reader .pdf	2	7	1
Inspiration	5	4	1
Windows Media Players	3	7	
Other Media Players	5	5	
Adobe Photoshop images	8	2	
Other Photo editing	8	2	
Windows Sound Recorder	8	2	
Cool Edit	9	1	
Other Audio File Editor	10		
Dreamweaver	9	1	
Other Webpage Composer	9	1	
eCompanion	6	4	
eCollege	4	6	

N = 10

The final instrument was the Student Attitudes toward Learning Tools Course, which contained thirty-seven items and asked students to report their opinions about the course. Students reported experience levels with computers and online courses, preferences of topics and instructional pace, expectations of instructor, and difficulties with assignments.

Procedures

The courses were conducted in fall 2003. The online, or WBI, version ran the entire semester whereas the on campus, or WEI, version was conducted during the last eight weeks of the semester (due to conflicts with another weekend course held on Friday afternoons). To accommodate for the compressed time of the WEI version, students were allowed to complete the course in two terms rather than in one semester.

The Proficiency Checklist was administered within the first two weeks of either version. Data from this checklist were reviewed at the time of its administration in order to make any necessary adjustments to the course. However, the only changes to types of software were due to the availability to free trial versions of the software rather than due to proficiencies. A second change to the WBI version was to open the last four sessions for the entire session enabling students to access the last four sessions at any time during the term rather than only having access to a session during the time scheduled within the web course.

The students were required to attend the sessions and were given time to complete assignments (two weeks for the WBI and one week for the WEI version); assignments were submitted either through an online drop box to the instructor or via email. Some assignments for the WBI were also to respond to either document sharing, threaded discussions, and/or locating websites. They received feedback from the instructor on their assignments one week after completion based on a range of scores from satisfactory plus (S+) to unsatisfactory minus (U-).

The Student Attitudes toward Learning Tools Course was given at the end of the course during the wrap-up session in both WEI and WBI. All data collected were analyzed after the course had ended and final grades

were posted.

Discussion and Summary of the Results

We are happy to report that all students passed the course (both versions) with a satisfactory grade. Their scores were due in part to meeting the requirements of the course, but also to their level of proficiency in using computers and the Web. Most students had had some experience with online courses as required to some degree by other courses in their IDT program. (Refer back to Table 3 for the student proficiency checklist results.) However, when dealing with audio, photo, sound, and website editors, most of the students reported only a familiarity with such software. In addition, the WEI students reported low proficiencies in the web management system.

The results from the Student Attitude toward a Learning Tools Course administered at the end of the semester indicated that students reported being proficient in using computers (70% in WEI and 89% in WBI) and students in both versions had high levels of comfort with using the Web (100%) and 60% in WEI and 70% in WBI had previously taken an online course. The results of the Student Attitude toward Learning Tools Course questionnaire suggested that only 80% of the WEI students felt comfortable with that delivery format whereas 100% in the WBI student felt comfortable. 100% in WEI reported agreement that course topics were relevant whereas 89% in the WBI agreed, with 11% strongly disagreeing. Those disagreeing were most likely to have been very experienced with computers and thought that the expectations, content, and pace of the beginning session were set too low for them. It should be noted that because we were unable to gain information about the online students and their proficiency in the WBI until it began and to be on the conservative side, we used the first session to cover some of the basics with MS Office and the Web. Perhaps the 'bar' was set too low for this session and for the types of students who took the online version of this course.

We also found that 80% in both the WEI and the WBI liked the *student lounge* (their own threaded discussion) option and 56% in WBI also liked the option to discuss assignments. The WEI students (50%) reported that the instructor should be expected to help with technical problems whereas 70% in the WBI disagreed with that statement. Again, this finding may reflect a difference in experience level of those students who opt for the oncampus version vs. the online versions. Students in both versions reported finding the online tutorials were helpful and students of both versions agreed that the lectures were helpful. Almost all WEI students suggested that the units of instruction were clear. Most in both versions reported overall satisfaction with the course. The course, both versions, appears to be successful based on student opinion. Table 4 shows the results of the entire survey.

Table 4. *Results of Student Attitudes toward a Learning Tools Course*

	Question	WEI Mean	WBI Mean
1	I have a great deal of computer experience.	2.80	3.22
2	I have a great deal of prior knowledge or experience in instructional design.	2.00	2.33
3	I am very comfortable working on the Internet and the WWW.	3.30	3.67
4	Technical problems frustrate me.	2.90	2.44
5	The pace of the class was too rapid.	1.87	1.33
6	I think that I worked hardere in this class than if I were in the online version (classroom version).	2.93	1.67
7	I feel that as a student, I had enough control over my learning in this class.	3.20	3.44
8	The assignments for the units were not that difficult.	2.80	3.11
9	The feedback I received on assignments was sufficient for this class.	3.25	3.22
10	Removed.		
11	I liked the student lounge option.	3.11	2.86
12	I have taken a web-enhanced (web-based) class prior to this one.	2.60	3.11
13	I expected immediate help from my instructor when I had problems.	2.60	2.22
14	I contacted my instructor during the semester about a problem or question.	6Yes 4No	7Yes 2No
14a	The instructor or the teaching assistants helped me with my problem or question.	3.83	3.63

14b	The instructor or the teaching assistants provided me with immediate help.	3.67	3.38
15	I am comfortable with web-enhanced (web-based) instruction.	2.89	3.63
16	The topics in this course are relevant.	3.60	3.33
17	The topics in this course will be helpful to me.	3.70	3.22
18	I liked being able to work at my own pace on course assignments.	3.80	3.89
19	I liked that each unit has a precise start and stop date.	3.70	2.56
20	I liked being able to access all of the units at once without waiting for the unit start date.	3.00	3.78
21	I contacted eCollege Help/support for technical problems	0Yes 10No	3Yes 6No
21a	I was able to get help with technical problems from the eCollege/Help support desk.	N/A	4.0
22	It's realistic to expect my instructor to respond to my email concerns within a couple of hours.	1.75	1.75
23	I expected my instructor to help me with technical problems.	2.67	1.75
24	I found the online tutorials helpful (webliography).	3.33	3.00
25	I found the lectures (text or PowerPoint) helpful.	3.20	3.22
26	The assignments clearly identified the tasks to do for each unit.	9Yes 1No	8Yes 1No
27	I had very few technical problems.	3.10	3.33
28	I had very few problems with assignments.	3.20	3.44
29	The assignments took a long time to complete.	1.90	1.56
30	I needed more interaction with the instructor and the other students.	2.10	1.67
31	Overall, I am satisfied with this course.	3.20	3.56
	1=Strongly Disagree 2=Disagree 3= Agree 4= Strongly Agree	N=10	*N*=9

Future Implications Based on the Results

One of the implications for this course is that the types of software and delivery of the course will continue to evolve. We anticipate that future versions of the course will involve teaching about creating and using video for course projects as well as new Web features, such as blogging, as they become available. The course may also involve the use of other types of equipment such as PDAs, cell phones, etc. as well as video and audio conferencing. Again, introduction to software and hardware advances will be based on the availability of new versions, new innovations, and how student proficiency advance. Although it is too early to predict or prescribe, over time we may find out that those who take Learning Tools online may have higher proficiency levels than those who prefer the oncampus version and, hence, prefer topics that require more advanced computing skills for each session. However, much will depend on the level of lowest common denominator, effect of the computer equipment, high-speed accessibility for the participants.

The guidelines on which the on-campus and online versions were based seemed to be appropriate. The two versions were kept in alignment in terms of what was taught and required of student participants. In addition, the use of the Web resources and materials in both allowed for ease in accessing and using tutorials and free trial versions. The class size, being kept to a small number, was manageable for introducing technology; having teaching assistants also helped in terms of providing timely feedback and troubleshooting. We would advocate that such courses, especially when taught in a virtual classroom, be kept to a minimum number of students. Although the interaction required among students for both versions was kept to a minimum, they seemed to develop a sense of community. Because the WEI students had face-to-face interaction, the student lounge threaded discussion may have been less important or necessary for them. However, students in both versions seemed to enjoy this threaded discussion and those in the WBI enjoyed discussing the assignments amongst themselves. Hence, we think that the amount of interaction was set at the appropriate level.

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